335-7-2-.03 Inorganic Chemical Standards and Monitoring Requirements.

(1) The following are MCLs for inorganic chemicals:

Contaminant	MCL (mg/L)
Antimony	0.006
Arsenic	0.01
Asbestos	7 Million Fibers*/Liter
Barium	2.0
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cyanide	0.2
Fluoride	4.0
Lead	0.015
Mercury	0.002
Nickel	0.1
Nitrate (as N)	10
Nitrite (as N)	1
Total Nitrate/Nitrite	10
Selenium	0.05
Sulfate	500
Thallium	0.002

*Longer than 10 micrometers

(2) Should any inorganic contaminant exceed the MCL, the system must establish a treatment process using the best available technology to achieve compliance with the MCL or cease using the source of supply in conjunction with a Department-issued compliance schedule. The Department may require the use of an alternate source of drinking water.

(3) Sampling for asbestos shall be as follows:

(a) Community and NTNC water systems shall analyze for asbestos during the first three-year compliance period of each nine-year compliance cycle.

(b) A system that is not vulnerable to asbestos contamination may apply to the Department for a waiver from asbestos monitoring for each three-year monitoring period. If the Department grants the waiver, the system is not required to monitor.

(c) A system vulnerable to asbestos contamination due to corrosion of asbestos-cement pipe shall collect at least one sample from a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur. A system determined to be vulnerable to asbestos contamination in source water shall monitor at least one sample representative of each suspected source after treatment.

(d) Community and NTNC water systems which exceed the MCL shall analyze for asbestos quarterly beginning in the next quarter after the violation occurred. Sampling may be reduced to initial monitoring requirements if the average of all analytical results is less than 3.5 million fibers/Liter. Groundwater systems shall analyze a minimum of two quarterly samples and surface water systems a minimum of four quarterly samples.

(e) The Department may require analysis of asbestos during a specific quarter of the year.

(f) The Department has the authority to determine compliance based on analytical results and other information compiled by Department staff.

(g) When the MCL for asbestos is exceeded, a second analysis shall be initiated within two weeks and the average of the two analyses shall be used as the compliance level. Should this level also exceed the MCL, the Department shall be notified within 48 hours.

(4) Sampling for nitrates shall be as follows:

(a) Community and NTNC water systems utilizing surface sources shall analyze for nitrates annually. Community and NTNC water systems utilizing a new surface source shall analyze for nitrates four consecutive quarters. Samples shall be collected during periods of normal operating conditions from the entry point to the distribution system for each surface source.

(b) Community and NTNC water systems utilizing surface sources shall analyze for nitrates annually if all analytical results from four consecutive quarters are less than 4.5 mg/L. A surface water system shall return to quarterly monitoring if any one sample is greater than 4.4 mg/L.

(c) Community and NTNC water systems utilizing groundwater sources and all non-community water systems shall analyze for nitrates annually. Samples shall be collected during periods of normal operating conditions from the entry point to the distribution system representing each source or treatment plant utilized.

(d) Community and NTNC water systems utilizing groundwater sources shall analyze for nitrates quarterly for at least one year following any one sample whose analytical result is greater than 4.4 mg/L. Sampling may be reduced to annually if the average of four consecutive quarterly results is less than 4.5 mg/L.

(e) The Department may require analysis of nitrates during a specific quarter of the year. Samples must be collected during the quarter which previously resulted in the highest analytical result unless laboratory availability or other conditions require sampling during another quarter.

(f) The Department has the authority to determine compliance based on analytical results and other information compiled by Department staff.

(g) When the MCL for nitrates is exceeded, a second analysis shall be initiated within 24 hours and the average of the two analyses shall be used as the compliance level. Should this level also exceed the MCL, the Department shall be notified within 48 hours. Should the system be unable to collect a confirmation sample within 24 hours, the system must immediately notify their customers for an acute violation and collect a confirmation sample within 14 days of the original sample date.

(5) Sampling for nitrites shall be as follows:

(a) Community and NTNC water systems utilizing a new surface source shall collect during periods of normal operating conditions one sample for nitrites annually. Community and NTNC water systems utilizing groundwater sources shall collect during periods of normal operating conditions from the entry point to the distribution system representing each groundwater source or treatment plant utilized one sample for nitrites every three years. One sample shall be collected from every new transient non-community water source prior to approval being given to place the new source into operation.

(b) All public water systems shall collect repeat samples for nitrites the quarter following any analytical result for nitrate which exceeds 4.4 mg/L. Systems shall monitor at least quarterly for one year following any one sample whose analytical result is greater than 0.54 mg/L. Sampling may be reduced to annually if the average of four consecutive quarterly results is less than 0.54 mg/L.

(c) The Department may require analysis of nitrites during a specific quarter of the year. Samples must be collected during the quarter which previously resulted in the highest analytical result unless laboratory availability or other conditions require sampling during another quarter.

(d) The Department has the authority to determine compliance based on analytical results and other information compiled by Department staff.

(e) When the MCL for nitrites is exceeded, a second analysis shall be initiated within 24 hours and the average of the two analyses shall be used as the compliance level. Should this level also exceed the MCL, the Department shall be notified within 48 hours. Should the system be unable to collect a confirmation sample within 24 hours, the system must immediately notify their customers for an acute violation and collect a confirmation sample within 14 days of the original sample date.

(6) Sampling for inorganic chemicals other than asbestos, nitrates, and nitrites shall be as follows:

(a) Community and NTNC water systems utilizing surface sources shall analyze for inorganic chemicals annually. Samples shall be taken during

periods of normal operating conditions from a representative point in the distribution system for each surface source.

(b) Community and NTNC water systems using groundwater sources shall analyze samples collected during periods of normal operating conditions from the distribution system representing each source or treatment plant utilized. Analysis will be performed on no less than a three year cycle.

(c) Non-community systems must sample at a frequency established by the Department.

(d) Community and NTNC water systems which exceed the MCL for an inorganic contaminant other than asbestos, nitrate and nitrite shall analyze quarterly for that contaminant beginning in the next quarter after the violation occurred. Sampling may be reduced to initial monitoring requirements if the average of all analytical results is less than one-half of the MCL. Groundwater systems shall analyze a minimum of two quarterly samples and surface water systems a minimum of four quarterly samples.

(e) The Department may require analysis of inorganic contaminants during a specific quarter or season of the year.

(f) The Department has the authority to determine compliance based on analytical results and other information compiled by Department staff.

(g) If the result of an analysis for an inorganic contaminant other than asbestos, nitrites and nitrates exceeds the established MCL, the supplier of water shall report to the Department within seven days of receipt of the results. Also an additional confirmation sample shall be collected from the same sampling point within fourteen days of the original sampling date. The average of the two samples shall be used to determine the compliance level. If more than the minimum number of samples are collected during a compliance period, the average of the values will be used as the compliance level.

1. Compliance with MCLs will be determined based on the analytical result(s) obtained at each sampling point. If one sampling point is in violation of an MCL, the system is in violation of the MCL.

2. For systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point. If the average of any sampling point is greater than the MCL, then the system is out of compliance with the MCL. If any one sample would cause the annual average to be exceeded, then the system is out of compliance immediately.

3. For systems monitoring annually or less frequently, if any sample result exceeds the MCL at any sample point, the system is out of compliance with the MCL.

4. Systems must include all samples taken and analyzed under the provisions of this rule in determining compliance, even if that number is greater than the minimum required.

5. If a system does not collect all required samples when compliance is based on a running annual average of quarterly samples, compliance will be based on the running average of the samples collected.

6. If a sample result is less than the detection limit, zero will be used to calculate the annual average.

(h) Arsenic sampling results shall be reported to the nearest 0.001 mg/L.

(i) All new systems or systems that use a new source of water must demonstrate compliance with the MCL by monitoring the first year of operation. Monitoring conducted to allow a new source to be utilized may be substituted for this initial sample. Routine and increased monitoring frequencies shall be conducted in accordance with the requirements of this rule.

(j) Community and NTNC water systems may apply to the Department for a waiver from monitoring inorganic chemicals other than asbestos, nitrates, and nitrites. Issuance of the waiver shall be based on established vulnerability criteria, results of water analysis and a demonstration by the system of no use, transport, storage or disposal in the watershed or Source Water Assessment Areas I and II. The waiver, if granted, shall be in effect for two compliance periods and the system must reapply for the waiver every two compliance periods. A system must collect one sample at each sampling point for inorganic chemicals other than asbestos, nitrates, and nitrites during the time frame the waiver is in effect.

Author: Joe Alan Power, Thomas S. DeLoach, Edgar K. Hughes, Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990.
Amended: September 19, 1995 (ER); November 28, 1995; effective January 2, 1996; March 12, 2002; May 30, 2003; January 28, 2004; December 12, 2005; January 22, 2008; XXXXX, 2012.

335-7-2-.04 Synthetic Organic Chemical (SOCs) Standards and Monitoring Requirements.

(1) The following are the MCLs for ~~synthetic organic chemicals~~ SOCs:

Contaminant	MCL (mg/L)
Alachlor	0.002
Atrazine	0.003
Carbofuran	0.04
Chlordane	0.002
Dibromochloropropane	0.0002
2,4-D	0.07
Endrin	0.002
Ethylene Dibromide	0.00005
Heptachlor	0.0004
Heptachlor Epoxide	0.0002
Lindane	0.0002
Methoxychlor	0.04
Polychlorinated Biphenyls	0.0005
Pentaclorophenol	0.001
Toxaphene	0.003
2,4,5-TP	0.05
Benzo(a)pyrene	0.0002
Dalapon	0.2
Di(2-ethylhexyl) phthalate	0.006
Di(2-ethylhexyl) adipate	0.4
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Glyphosate	0.7
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Oxamyl (Vydate)	0.2
Picloram	0.5
Simazine	0.004
2,3,7,8-TCDD (Dioxin)	~~3 * 10-~~ [8]0.00000003

(2) The following are the monitoring requirements for SOCs:

(a) Community and NTNC water systems shall analyze for SOCs at the frequency listed below. Samples shall be collected during periods of normal operating conditions from the entry point to the distribution system for each surface source or from the entry point to the distribution system representing each source of water used after any application of treatment. Samples shall be collected during the period most susceptible to pesticide contamination. Raw water analysis may be used to determine compliance if no treatment processes are used for the reduction of SOCs.

1. Community and NTNC water systems serving a population of less than or equal to 3,300 persons must collect one sample during each repeat compliance period if no SOCs were detected in the initial compliance period.

2. Community and NTNC water systems serving a population of greater than 3,300 persons must collect a minimum of two quarterly samples in one year during each repeat compliance period if no SOCs were detected in the initial compliance period.

(b) Community and NTNC water systems using water from more than one source and blending prior to the entry point to the distribution system must sample at the entry point to the distribution system during periods of normal operating conditions. Sampling of raw water from each source may be required if a contaminant is detected.

(c) Community and NTNC water systems shall sample all new sources for SOCs for four consecutive quarters. The system may apply for a waiver for the new source after two quarters of monitoring for any SOC which has not been detected above the monitoring trigger.

(d) Confirmation samples may be required by the Department to confirm a negative or positive result. Confirmation samples must be collected from a point representing the source and unless investigation proves initial samples were contaminated because of conditions at the sampling site or because of sampling procedure the confirmation results will be averaged with the initial results to determine compliance.

(e) Community and NTNC water systems may apply to the Department for a waiver from monitoring of any SOC. The waiver application should demonstrate lack of transport, storage and disposal of the contaminant in the watershed or Source Water Assessment Areas I and II as identified by the Alabama Wellhead Protection Plan. The waiver if granted shall be in effect for one compliance period and the system must reapply for the waiver for each compliance period. Reduced initial monitoring may be allowed during the compliance period for the SOCs for which the waiver is granted.

(f) The Department may require analysis of SOCs during a specific quarter of the year.

(g) The Department has the authority to determine compliance based on analytical results and other information compiled by Department staff.

(h) Non-compliance with any SOC MCL will occur when:

1. For systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point.

2. Any sample analysis exceeds the MCL, if monitoring is being conducted annually or less.

3. If one sampling point is in violation of an MCL, the system is in violation of the MCL.

(i) Upon exceeding the MCL, the system must establish a treatment process using the EPA approved best available technology to achieve compliance with the MCL or cease using the source of supply in conjunction with a Department issued compliance schedule.

(j) Repeat samples must be analyzed according to the following schedule:

1. If an SOC is detected above the monitoring trigger, community and NTNC water systems must monitor quarterly for the particular SOC which is detected. If related contaminants (heptachlor and heptachlor epoxide) are detected, then subsequent monitoring shall analyze for all related compounds.

2. Monitoring may be reduced to annually if the average of all analytical results within the past two years is less than one half the MCL and no analytical result within the past two years exceeds 75% of the MCL. Groundwater systems shall analyze a minimum of two quarterly samples and surface water systems a minimum of four quarterly samples.

3. Community and NTNC water systems which have three consecutive annual sample results with no detection of a SOC may apply to the Department for a waiver according to the criteria listed in rule 335-7-2-.19.

4. Systems serving a population of less than or equal to 3,300 persons and which are granted a waiver for a SOC which has been previously detected must collect a minimum of one sample during each repeat compliance period.

5. Systems serving a population of greater than 3,300 persons and which are granted a waiver for a SOC which has been previously detected must collect a minimum of two quarterly samples in one year during each repeat compliance period.

6. Community and NTNC water systems which exceed the MCL for a SOC shall analyze quarterly for that contaminant beginning in the next quarter after the violation occurred. Sampling may be reduced to annually if the

average of all analytical results within the past two years is less than one half of the MCL and no analytical result within the past two years exceeds 75% of the MCL. All community and NTNC water systems must analyze a minimum of four quarterly samples.

7. All repeat samples shall be collected at the sampling point where the detection occurred.

(k) If a system fails to collect the required number of samples, compliance will be based on the total number of samples collected.

(l) If a sample result is less than the detection limit, zero will be used to calculate the annual average.

Author: Joe Alan Power, Thomas S. DeLoach, Edgar K. Hughes, Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990.
Amended: September 19, 1995 (ER); November 28, 1995; December 8, 1998; effective January 25, 1999; March 12, 2002; May 30, 2003; December 12, 2005; January 22, 2008; XXXXX, 2012.

335-7-2-.08 Radionuclide Standards and Monitoring Requirements.

(1) To determine compliance with the MCLs for natural radionuclides in picocuries per liter (pCi/L) listed below, the averages of data shall be used and shall be rounded to the same number of significant figures as the MCL for the contaminant in question:

Contaminant	MCL
Gross alpha particle	15 pCi/L[1] ~~(including radium-226 but excluding radon & uranium)~~
Combined radium-226 & radium-228	5 pCi/L
Uranium	30 µg/L

[1] Includes radium 226 but excludes radon & uranium

(2) The MCLs for manmade radionuclides are:

Contaminant	MCL
Tritium	20,000 pCi/L
Strontium 90	8 pCi/L
Beta particle and photon	4 millirem/year radioactivity

(3) To determine compliance, the detection limits shall not exceed the concentrations listed below:

Contaminant	Detection Limit
Gross Alpha Particle Activity	3 pCi/L
Radium 226	1 pCi/L
Radium 228	1 pCi/L
Uranium	1 µg/L
Tritium	1,000 pCi/L
Strontium-89	10 pCi/L
Strontium-90	2 pCi/L
Iodin-131	1 pCi/L
Cesium 134	10 pCi/L
Gross Beta	4 pCi/L
Other Radionuclides	1/10 of the MCL

(4) Monitoring requirements for gross alpha particle activity, radium-226, radium-228 and Uranium in community water systems are as follows:

(a) Initial monitoring for all community system sources to determine compliance for naturally occurring radionuclides shall be completed by December 31, 2007. Community water systems utilizing surface and/or groundwater sources shall monitor at every entry point to the distribution system that is representative of each source of water used after any application of treatment. Community water systems using water from more than one source and blending prior to the entry point to the distribution system must sample at the entry point to the distribution system during periods of normal operating conditions. Sampling of raw water from each source may be required if a contaminant is detected. New community water systems or community water systems that use a new source of water must begin monitoring in the first quarter after initiating use of the source. Community water systems must conduct more frequent monitoring if there are conditions determined by the Department that may increase the concentration of radioactivity in finished water. All samples collected from each entry point must be collected at the same sampling point.

1. Systems without acceptable previous monitoring data must monitor for four consecutive quarters at all sampling points before December 31, 2007.

2. Appropriate monitoring data from each entry point for the last compliance monitoring period that began between June 2000 and December 8, 2003 may be used to satisfy initial monitoring requirements.

3. The Department may waive the final two quarters of initial monitoring if the results of the monitoring from the previous two quarters are below the detection limit.

4. A gross alpha particle activity measurement may be substituted for the required radium-226 analyses, provided that the measured gross alpha particle activity does not exceed five pCi/L. A gross alpha particle activity measurement may be substituted for the required Uranium analyses, provided that the measured gross alpha particle activity does not exceed 15 pCi/L. A gross alpha measurement shall have a confidence level of 95 percent (1.65σ, where σ is the standard deviation of the net counting rate of the sample) for Radium 226 and Uranium. When a system uses a gross alpha particle activity measurement in lieu of a radium-226 and/or uranium measurement, the gross alpha particle activity analytical result will be used to determine the future monitoring frequency for radium-226 and/or uranium. If the gross alpha particle activity result is less than detection, one half the detection limit will be used to determine compliance and the future monitoring frequency.

(b) Community water systems may reduce monitoring for naturally occurring radionuclides after completing initial monitoring requirements.

1. If the average of the initial monitoring results for each contaminant (gross alpha particle activity, uranium, radium-226, or radium-228) is below the detection limit, the system must monitor for that contaminant at that sampling point every nine years.

2. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is at or above the detection limit but at or below one half the MCL, the system must monitor for that contaminant at the sampling point every six years. For combined radium-226 and radium-228, the analytical results must be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is at or above the detection limit but at or below one half the MCL, the system must monitor for that contaminant at the sampling point every six years.

3. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is above one half the MCL but at or below the MCL, the system must monitor for that contaminant at the sampling point every three years. For combined radium-226 and radium-228, the analytical results must be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is above one half the MCL but at or below the MCL, the system must monitor for that contaminant at the sampling point every three years.

4. Systems must use the analytical results from the previous reduced monitoring period to determine the monitoring frequency for subsequent monitoring periods (e.g., if a system's sampling point is on a nine year monitoring period, and the sample result is above on half the MCL, then the next monitoring period for that sampling point is three years).

5. If a system has a monitoring result that exceeds the MCL while on reduced monitoring, the system must monitor quarterly at that sampling point until the system has results from four consecutive quarters that are below the MCL, unless the system enters into another schedule as part of a formal compliance agreement with the Department.

(c) If the average annual MCL for gross alpha particle activity, Radium 226, Radium 228 or Uranium is exceeded, the supplier of a community water system shall notify the Department and provide public notification. The system shall monitor quarterly at the monitoring point until results from four consecutive quarters are at or below the MCL or until a monitoring schedule as a condition to an exemption or enforcement action shall become effective. Upon exceeding the MCL, the system must establish a treatment process using the EPA approved best available technology to achieve compliance with the MCL or cease using the source of supply in conjunction with a Department issued compliance schedule.

(5) Monitoring requirements for man-made radioactivity in community and NTNC water systems are as follows:

(a) Community water systems determined by the Department to be vulnerable shall monitor for beta particle and photon radioactivity. Systems must monitor quarterly for beta emitters and annually for tritium and strontium-90 at each entry point to the distribution system beginning within one quarter after being notified by the Department.

1. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average (computed quarterly) less than or equal to 50 pCi/L, the Department may reduce the frequency of monitoring at that sampling point to once every 3 years. Systems must collect all the samples required in the previous paragraph during the reduced monitoring period.

2. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds 50 pCi/L, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance. Doses must also be calculated and combined for measured levels of tritium and strontium to determine compliance.

3. Community water systems designated by the Department to monitor for beta particle and photon radioactivity can not apply to the Department for a waiver from the specified listed above.

4. Community water systems may analyze for naturally occurring potassium-40 beta particle activity from the same or equivalent sample used for the gross beta particle activity analysis. Systems are allowed to subtract the potassium-40 beta particle activity value from the total gross beta particle activity value to determine if the screening level of 50 pCi/L is exceeded. The potassium-40 beta particle activity must be calculated by multiplying elemental potassium concentrations (in mg/L) by a factor of 0.82.

(b) Community water systems utilizing water contaminated by effluents from nuclear facilities shall monitor quarterly for gross beta particle and iodine-131 radioactivity and annually for strontium-90 and tritium at each entry point to the distribution system beginning within one quarter after being notified by the Department.

1. Quarterly monitoring for gross beta particle activity shall be based on the analyses of monthly samples.

2. For iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. As ordered by the Department, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

3. Annual compliance for strontium-90 and tritium shall be based on the analyses of four quarterly samples.

4. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average (computed quarterly) less than or equal to 15 pCi/L, the Department may reduce the frequency of monitoring at that sampling point to every 3 years. Systems must collect all the samples required in paragraph (b) during the reduced monitoring period.

5. The Department may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of man-made radioactivity by the supplier of water where the Department determines such data are applicable to a particular water system. In the event that there is a release from a nuclear facility, systems that are using surveillance data must begin monitoring at the community water system's entry point(s) in accordance with paragraph (5)(a) or (b) of this rule.

6. If the average annual MCL for man-made radioactivity is exceeded, the supplier of water shall give notice to the Department and to the public. Monitoring at monthly intervals shall be continued until the concentration no longer exceeds the MCL as established by a rolling average of three monthly samples, or until a monitoring schedule as a condition of an exemption or enforcement action shall become effective. Systems who establish that the MCL is being met must return to quarterly monitoring until they meet the requirements set forth in this rule. Upon exceeding the MCL, the system must establish a treatment process using the EPA approved best available technology to achieve compliance with the MCL or cease using the source of supply in conjunction with a Department issued compliance schedule.

(c) General monitoring and compliance requirements for radionuclides.

1. The Department may require more frequent monitoring than specified in this rule, or may require confirmation samples at its discretion. The results of the initial and confirmation samples will be averaged for use in compliance determinations.

2. Each public water system shall monitor at the time designated by the Department during each compliance period.

3. Compliance with radionuclide MCLs will be determined based on the analytical result(s) obtained at each sampling point. If one sampling point is in violation of an MCL, the system is in violation of the MCL.

(i) For systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point. If the average of any sampling point is greater than the MCL, then the system is out of compliance with the MCL.

(ii) For systems monitoring more than once per year, if any sample result will cause the running average to exceed the MCL at any sample point, the system is out of compliance with the MCL immediately.

(iii) Systems must include all samples taken and analyzed under the provisions of this rule in determining compliance, even if that number is greater than the minimum required.

(iv) If a system does not collect all required samples when compliance is based on a running annual average of quarterly samples, compliance will be based on the running average of the samples collected.

(v) If a sample result is less than the detection limit, zero will be used to calculate the annual average, unless a gross alpha particle activity is being used in lieu of radium-226 and/or uranium. If the gross alpha particle activity result is less than detection, one half the detection limit will be used to calculate the annual average.

(6) The Department has the discretion to delete results of obvious sampling or analytic errors.

Author: Joe Alan Power, Thomas S. DeLoach, Edgar K. Hughes, Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990; effective December 5, 1990; May 30, 2003; January 28, 2004. **Amended:** December 12, 2005; January 22, 2008; XXXXX, 21012.

335-7-2-.09 Maximum Residual Disinfectant Levels and Monitoring Requirements (MRDLs).

(1) The following are the MRDLs:

Disinfectant	MRDL (mg/L)
Chlorine	4.0 (as Cl_2)
Chloramines	4.0 (as Cl_2)
Chlorine Dioxide	0.8 (as ClO_2)

(2) Community and NTNC water systems measure for disinfectant residuals.

(a) Systems that use either chlorine or chloramines as a primary or secondary disinfectant must measure the disinfectant levels ~~daily at the entrance to the distribution system from any treatment plant or purchase connection in use and at any distribution disinfection addition point or~~ at the time and location of monthly distribution microbiological samples that are collected to determine compliance with the total coliform rule.

(b) Community, NTNC, and transient noncommunity water systems using chlorine dioxide must measure the chlorine dioxide level daily at the entrance to the distribution system. On each day following a daily sample monitoring result that exceeds the MRDL, the system is required to take three chlorine dioxide distribution system samples. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system, the system must collect three samples as close to the first customer as possible, at intervals of at least six hours. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system, the system must collect one sample as close to the first customer as possible, one sample at a location representative of average residence time, and one sample representative of the maximum residence time in the distribution system.

(c) Non-compliance with the chlorine or chloramine MRDL will occur when the running annual average of monthly samples, computed quarterly, exceeds the MCL. When a water system switches between chlorine and chloramines, the average of all results must be used and the disinfectant utilized recorded on all monitoring reports. If a system fails to complete 12 consecutive months' monitoring, compliance with the MCL for the last four-quarter compliance period must be based on an average of the available data.

(d) Acute non-compliance with the chlorine dioxide MRDL will occur when any daily sample taken at the entrance to the distribution system exceeds

the MRDL and on the following day one or more of the three samples taken in the distribution system exceed the MRDL or the system fails to collect samples in the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system. The system must also take immediate corrective action to lower the level of chlorine dioxide below the MRDL. Nonacute non-compliance with the chlorine dioxide MRDL will occur when any two consecutive daily samples collected at the entrance to the distribution system exceed the MRDL and all distribution system samples collected are below the MRDL or the system fails to collect samples at the entrance to the distribution system the day following an exceedance of the chlorine dioxide MRDL. The system must also take corrective action to lower the level of chlorine dioxide below the MRDL at the point of sampling.

Author: Thomas S. DeLoach, Edgar K. Hughes, Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: June 7, 2000.
Amended: January 28, 2004; December 12, 2005; January 22, 2008; May 26, 2009; XXXXX, 2012.

335-7-2-.12 Stage 2 Disinfection Byproducts. Community and NTNC water systems that use a surface water source, groundwater source or purchase water from another public water system must monitor for disinfection byproducts (DBPs).

(a) Beginning January 1, 2012 systems must be in compliance with the TTHM and HAA5 MCLs [located in rule 335-7-2-.11(a)]. Any site's locational running annual average that exceeds either MCL will be an MCL violation. Systems may be granted a compliance extension until January 1, 2014 if the system requires capital improvements to comply with the MCLs. The system must enter into a binding contract, which would result in significant penalties to the system if the contract is not completed. All systems beginning January 1, 2012 must revert to routine monitoring until the system meets the reduced monitoring requirements below.

1. Systems must monitor during the month of the highest DBP concentrations.

2. Systems on quarterly monitoring must take dual samples sets every 90 days at each monitoring location.

3. The minimum number of samples, location of samples and sampling frequency are based upon the system's population and are in the following table. The sample locations must be at the locations identified in the system's Distribution System Evaluation (DSE) Report and cannot be moved without written approval from the Department. Systems that did not complete a DSE must monitor at the locations indicated in the system's monitoring plan. Systems must monitor according to the dates listed in the DSE Report or monitoring plan. In addition, surface water or ground water under the influence of surface water must collect one sample from the effluent of each treatment plant, prior to the first customer, at the same time the system conducts its DBP monitoring under this rule.

DBP Monitoring Frequency and Locations Beginning January 1, 2012:

Source Water Type[1]	Population	Monitoring Frequency	Distribution System Monitoring Location			
			Total per monitoring period	Highest TTHM Locations	Highest HAA5 Locations	Stage 1 Locations
Surface Water or Ground Water Under the Influence of Surface Water	< 10,000	per quarter	2	1	1	
	10,000-49,999	per quarter	4	2	1	1
	50,000-249,999	per quarter	8	3	3	2
	250,000-999,999	per quarter	12	5	4	3
	1,000,000-4,999,999	per quarter	16	6	6	4
	> 5,000,000	per quarter	20	8	7	5
Ground Water	< 500	per year	2	1	1	
	500-9,999	per year	2	1	1	
	10,000-99,999	per quarter	4	2	1	1
	100,000-499,999	per quarter	6	3	2	1
	> 500,000	per quarter	8	3	3	2

[1] Systems that receive both surface water and ground water must use the surface water section of the table to determine monitoring requirements.

4. Systems may reduce monitoring to the level specified in the following table any time the LRAA is ≤0.040 mg/L for TTHM and ≤0.030 mg/L for HAA5 at all monitoring locations. Systems may only use monitoring data collected under this rule or rule 335-7-2.11 to qualify for reduced monitoring. In addition, the source water annual average TOC level, before any treatment, must be ≤4.0 mg/L at each treatment plant treating surface water or ground water under the influence of surface water.

Reduced Monitoring Frequency

Source Type	Population	Monitoring Frequency [1]	Distribution System Monitoring Location per Monitoring Period
Surface Water or Ground Water Under the Influence of Surface Water	< 10,000	per year	2 dual sample sets: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement
	10,000-49,999	per quarter	2 dual sample sets at the locations with the highest TTHM and highest HAA5 LRAAs
	50,000-249,999	per quarter	4 dual sample sets - at the locations with the two highest TTHM and two highest HAA5 LRAAs
	250,000-999,999	Per quarter	6 dual sample sets - at the locations with the three highest TTHM and three highest HAA5 LRAAs
	1,000,000-4,999,999	Per quarter	8 dual sample sets - at the locations with the four highest TTHM and four highest HAA5 LRAAs
	> 5,000,000	Per quarter	10 dual sample sets - at the locations with the five highest TTHM and five highest HAA5 LRAAs
Ground Water	< 500	every third year	1 TTHM and 1 HAA5 sample: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter
	500-9,999	per year	1 TTHM and 1 HAA5 sample: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter
	10,000-99,999	per year	2 dual sample sets: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement
	100,000-499,999	per quarter	2 dual sample sets; at the locations with the highest TTHM and highest HAA5 LRAAs
	> 500,000	per quarter	4 dual sample sets at the locations with the two highest TTHM and two highest HAA5 LRAAs

[1] Systems on quarterly monitoring must take dual sample sets every 90 days.

5. Systems may remain on reduced monitoring as long as the TTHM LRAA is ≤0.040 mg/L and the HAA5 LRAA is ≤0.030 mg/L at each monitoring location for systems on quarterly reduced monitoring or each TTHM sample is ≤0.060 mg/L and each HAA5 LRAA is ≤0.045 mg/L for systems with annual or less frequent monitoring. In addition, the source water annual average TOC level, before any treatment must be ≤4.0 mg/L at each treatment plant treating surface water or ground water under the influence of surface water. Systems must return to routine monitoring if any of the levels are exceeded. The Department may return any system to routine monitoring at its discretion.

6. The following TOC monitoring requirements apply to systems qualifying for or on reduced TTHM and HAA5 monitoring. If a system is required to monitor for TOC per rule 335-7-2-.11(i)8., monthly samples shall be taken every 30 days.

7. If a system is required to monitor annually or less the system must increase monitoring to dual samples sets once per quarter (taken every 90 days) at all locations if a TTHM sample is >0.080 mg/L or a HAA5 sample is >0.060 mg/L at any location. A system is in violation of the MCL when the LRAA exceeds the MCLs based upon four consecutive quarters of monitoring or the LRAA calculated based on fewer than four quarters of data if the MCL would be exceeded regardless of the monitoring results of subsequent quarters. Systems may return to routine monitoring once the systems has conducted increased monitoring for at least four consecutive quarters and the LRAA for every monitoring location is ≤0.060 mg/L for TTHM and is ≤0.045 mg/L for HAA5.

8. If a system fails to collect any required sample, the system has incurred a monitoring violation. The system will receive a monitoring violation for each quarter in which the missed monitoring result would have been used to determine compliance.

9. Systems on increased monitoring under rule 335-7-2-.11 must remain on increased monitoring until the system meets the requirements of this rule for returning to routine monitoring.

10. Systems that are required to monitor quarterly must calculate LRAAs for TTHM and HAA5 using monitoring results collected under this rule and determine that each LRAA does not exceed the MCL. If the system does not collect four consecutive quarters of monitoring, the system must calculate compliance with the MCL based on the average of the available data from the most recent four quarters. If the system takes more than one sample per quarter at a monitoring location, they must average all samples taken in the quarter at that location to determine a quarterly average to be used in the LRAA calculation.

11. Systems that are required to monitor yearly or less frequently must determine that each sample taken is less than the MCL. If no sample exceeds the MCL, the sample result is considered the LRAA and the system is in

compliance. If any sample exceeds the MCL the system is not in violation but must begin increased monitoring as outlined in this rule.

12. A system that is required to conduct quarterly monitoring must make compliance calculations at the end of the fourth quarter that follows the compliance date and at the end of each subsequent quarter or earlier if the LRAA calculated based on fewer than four quarters of data would cause the MCL to be exceeded regardless of the monitoring results of subsequent quarters.

(i) Systems that monitor less frequently than quarterly must determine compliance beginning with the first compliance sample taken after the compliance date.

(ii) Upon exceeding the MCL, the system will be required to submit a schedule to either establish a treatment process using the EPA approved best available technology to achieve compliance with the MCL or cease using the source of supply in conjunction with a Department issued compliance schedule.

13. Systems that did not complete a DSE must develop and implement a monitoring plan for TTHMs and HAA5s. The monitoring plan must be submitted to the Department by the applicable date in rule 335-7-2-.13. Systems must identify and justify all monitoring locations.

Author: Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: January 22, 2008; XXXXX, 2012.

335-7-2-.16 Operational Evaluation Level.

(1) A system has exceeded the operational evaluation level at any monitoring location where the sum of the two previous quarters' TTHM results plus twice the current quarter's TTHM result, divided by 4, exceeds 0.080 mg/L, or where the sum of the two previous quarters' HAA5 results plus twice the current quarter's HAA5 result, divided by 4, exceeds 0.060 mg/L.

(2) If the operational evaluation level has been exceeded, the system must conduct an operational evaluation and submit a written report of the evaluation to the Department no later than 90 days after being notified of the analytical result that causes the system to exceed the operational evaluation level. The written report must be made available to the public upon request.

(3) The operational evaluation must include an examination of system treatment and distribution operational practices, including storage tank operations, excess storage capacity, distribution system flushing, changes in sources or source water quality, and treatment changes or problems that may contribute to TTHM and HAA5 formation and what steps could be considered to minimize future exceedences.

(4) The system may request to limit the scope of the evaluation if the system is able to identify the cause of the operational evaluation level exceedance. The request to limit the scope of the evaluation does not extend the schedule in paragraph (2) of this rule for submitting the written report. The Department must approve this limited scope of evaluation in writing and the system must keep that approval with the completed report.

(5) If a consecutive system exceeds the TTHM and/or the HAA5 MCLs per paragraph 335-7-2-.12(a) then the following applies:

(i) A joint operational evaluation must be completed which includes the wholesale system that supplies water to the site where the exceedance occurred, and any consecutive system that conveys the water where the exceedance occurred.

(ii) The joint operational evaluation must be signed by responsible officials from each wholesale and consecutive system

(iii) Representatives from all systems involved shall meet quarterly to evaluate the effectiveness of the measures implemented based on the operational evaluation.

(I) An attendance list and meeting minutes shall be submitted to the Department within 30 days of the meeting.

~~(I)~~(II) Once the consecutive system complies with the TTHM and/or HAA5 MCLs, then the quarterly meeting will no longer be required.

Author: Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: January 22, 2008; XXXXX, 2012.

335-7-4-.03 Permitting Requirements for System Additions.

(1) A permit to construct is required for, new water storage facilities, new or expanded water sources or treatment plants, pumping facilities, and distribution system additions which will significantly affect system hydraulics at community and NTNC water systems.

(2) Prior to submitting a permit application package for additions to an existing community or NTNC water system, an engineering report may be required by the Department. This report shall include the following:

(a) Details of the proposed project, including its location on a map,

(b) Its relationship to the existing system,

(c) Its impact on the existing system,

(d) The facilities to be included,

(e) If required by the Department, alternatives to the proposed project and the justification for choosing the proposed alternative, and

(f) Any additional information the Department deems necessary to adequately address the requirements of ADEM Regulations.

(g) All information should be submitted in electronic format unless paper format is approved by the Department in advance. The Department may require paper format.

(3) Prior to beginning construction on a system addition, the Department must issue a Water Supply Permit to construct the proposed addition.

(4) Community and NTNC systems shall submit the following permit application package when requesting a permit for the construction of significant modifications:

(a) A cover letter with a description of the project, the water system name, and any other pertinent information,

(b) A completed Department application form, paper format is acceptable,

(c) Permit fees as established by the Department,

(d) A layout map showing the location of the project as it relates to existing water system(s) in the area, and

(e) A ~~minimum of two~~ set~~s~~ of plans and specifications reflecting acceptable construction techniques and design. Plans not meeting Departmental guidelines should be accompanied with documentation supporting design differences. If paper format is submitted, plans should be on 11X17 paper or smaller unless approved by the Department in advance.

(f) Information which demonstrates the applicant water system has technical, managerial and financial capacity may be required.

(5) From the effective date of the permit until the requirements of 335-7-4-.10 are met, the water system shall submit to the Department quarterly progress reports, which provide the status of construction and the estimated date of completion. A project update must also be submitted within 72 hours of a request from the Department.

(6) Transient non-community water systems proposing facility additions must provide the following:

(a) A completed Department application form, paper format is acceptable,

(b) Permit fee as established by the Department, and

(c) Any additional information the Department may require to complete a review of the facility addition.

Author: Joe Alan Power, Edgar K. Hughes.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-2A-5, 22-22A-6.
History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990; effective December 5, 1990.
Amended: December 12, 2005; January 18, 2011; XXXX, 2012.

335-7-4-.04 Requirements for New Water Systems.

(1) Prior to submitting a permit application package for the construction of a new community or NTNC water system, an engineering report must be submitted to the Department. All documents associated with the application package should be in electronic format unless paper format is approved by the Department in advance. The Department may require paper format. The engineering report is to provide the following:

(a) A description of the proposed service area,

(b) A copy of a purchase agreement with a permitted public water system or the proposed sources of water supply and a description of treatment processes to be employed,

(c) An estimation of maximum and future water demands by the system,

(d) A 10-year financial plan that details how the water system will meet the financial, technical and managerial requirements of ADEM Regulations,

(2) Community and NTNC systems shall submit a completed application package when requesting a permit for the construction of a new public water system.

(3) Proposed transient non-community water systems must provide the following:

(a) A completed Department permit application form, paper format is acceptable,

(b) Permit fee as established by the Department.

(c) A summary report describing the functions of the facility, number of anticipated people it will serve, bacteriological and nitrate analyses of the proposed source of supply, well construction data should the proposed source be a well and any sources of contamination which might impact the water quality, and

(d) Information which demonstrates the applicant water system has technical, managerial and financial capacity.

Author: Joe Alan Power, Edgar K. Hughes.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990; effective: December 5, 1990.
Amended: June 7, 2000; December 12, 2005; XXXXX, 2012.

335-7-4-.10 Completed Project Approval.

(1) The following information shall be submitted to the Department in electronic format, unless paper format is approved by the Department in advanced, prior to the final inspection:

(a) A written request to the Department to conduct a final inspection at least two weeks prior to the anticipated date of the final inspection.

(b) Water main pressure test results.

(c) Results of bacteriological analyses from distribution lines and storage tanks. A minimum of one bacteriological sample result will be collected for every 7000 linear feet of water main and on every dead end water line installed.

(d) All primary and secondary water quality analysis representing treated water from a new source or plant.

(e) A completed application for approval to use a well if applicable.

(2) The following information shall be submitted no later than 60 days after the final inspection:

(a) Record drawings of all parts of the project included in the project, if required by the Department. For water main installations, the record drawings will be accompanied by valve references. Record drawings submitted in paper format shall be submitted on 11X17 paper or smaller unless approved by the Department in advance.

(b) A project completion form signed by the permittee.

(c) Copies of any forms that require updating with the completion of the project.

(3) For new surface water treatment plants, the results of plant treatment test must be performed for a minimum of 40 hours, prior to the final inspection. The test must include the operation of all treatment equipment and processes to be used during normal plant operations. The Department may require that the treated water during this test period not enter the distribution system.

Author: Joe Alan Power, Edgar K. Hughes.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990; effective: December 5, 1990.
Amended: December 12, 2005; January 18, 2011; XXXX, 2012.

335-7-4-.11 Consecutive Water System Requirements.

(1) Consecutive systems must meet specific monitoring and reporting requirements as identified in subsequent chapters in these regulations.

(a) A purchase water contract shall be maintained by this system that allows sufficient water to be purchased to meet all system demands during normal operating periods. Upon expiration of such contract, the system shall not exceed a period of more than 30 consecutive days without a revised contract to ensure that adequate water can be provided to all existing customers. A copy of the new or revised water purchase contracts shall be provided to the Department within fifteen (15) days of execution.

(b) Water purchase contracts shall be modified to obtain additional capacity prior to the financial and construction commitment to serve additional customers that will cause the existing contract maximum allowable water purchased to be exceeded.

(2) Consecutive water systems must provide adequate operation through the employment of certified operators to ensure that the quality of water provided meets all State and Federal Drinking Water Standards.

(a) The system must employ an operator in responsible charge that meets the requirement of ADEM Administrative Code Division 10.

(b) The responsible certified operator or its designees shall collect the required minimum number of monthly bacteriological samples and have these analyzed at an ADEM certified laboratory.

(c) The system must maintain an updated Bacteriological Sample Site Plan indicating the location of sites to be used for monthly bacteriological sampling, the primary and backup certified laboratories for bacteriological analysis, a public notification procedure to be activated in case of monitoring or maximum contaminant level violations, and other pertinent information necessary to ensure compliance with the bacteriological monitoring and analysis requirements.

(d) Samples must be taken at intervals established by the Department to analyze for lead and copper in accordance with 335-7-11.

(e) An annual Consumer Confidence Report must be prepared and made available to consumers in accordance with 335-7-14.

(f) Monthly Operation Data Reports must be maintained at the system office and a copy provided to the Drinking Water Branch of ADEM within 10 days after the end of each reporting month.

1. Water systems serving a population of 3,300 or greater shall submit the Monthly Operation Data Report in an electronic format approved by the Department for all reports dated January 1, 2013 or later.

2. Water systems serving a population of less than 3,300 shall submit the Monthly Operation Data Report in an electronic format approved by the Department for all reports dated January 1, 2014 or later.

(g) A Cross-Connection Policy shall be established to minimize contamination through cross-connections and unapproved connections. This policy shall be updated periodically and enforced within the capabilities of the system.

(h) Any additional information or forms required by ADEM Regulations.

Author: Joe Alan Power, Edgar K. Hughes, Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-32, 22-23-49, 22-23-49, 22-22A-5, 22-22A-6.
History: March 12, 2002.
Amended: December 12, 2005; January 22, 2008; XXXXX, 2012.

335-7-5-.13 Springs. Springs, quarries, and other groundwater sources open to the atmosphere and under the direct influence of surface water are classified as a surface source requiring complete treatment and filtration. A proposal for use of a spring without complete treatment shall meet the following requirement:

(a) The results of flow, turbidity and temperature data taken twice weekly for a minimum of 12 consecutive months,

(b) Total and fecal coliform (or ~~e. coli~~*E. coli*) bacteria results from weekly sampling for a minimum of 12 consecutive months,

(c) Data indicating the site is not subject to flooding, and

(d) Analysis results from a certified laboratory for all contaminants identified in the primary and secondary standards and any listed unregulated contaminants.

Author: Joe Alan Power, Edgar K. Hughes.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: May 23, 1977, Repealed and readopted: January 4, 1989; October 31, 1990.
Amended: September 19, 1995 (ER); November 28, 1995; December 8, 1998; effective January 25, 1998; June 7, 2000; December 12, 2005; XXXXX, 2012.

335-7-5-.15 Ground Water Quality. The quality of water produced from wells and springs must be determined through analysis of samples representative of the sources.

(a) Physical Quality. Water produced from wells or springs to serve a community or NTNC system shall be free of rock or sand particles, silt, mud, or other foreign material. If compliance cannot be judged through visual observation, the following procedures shall be followed:

1. A turbidity test shall be performed according to methods approved by the Department and the results submitted to the Department.

2. A sample of the water shall be subjected to centrifuge or filtering tests. The test method shall be submitted by the project engineer to the Department which shall review and approve the method and apparatus prior to testing. If the design and apparatus are approved, the full capacity of the well upon start-up shall be tested for ten minutes. The maximum acceptable amount of material collected is one part per million.

(b) Bacteriological Quality. Every new, modified or reconditioned groundwater source shall be tested for bacteriological quality. A minimum of three chlorine free water samples collected at various periods during the capacity test shall be analyzed for both ~~fecal and total~~ total and fecal coliform (or *E. coli*) bacteria by a laboratory certified by the Department. After the final pumping equipment has been installed and properly disinfected, at least two samples of chlorine free water shall be analyzed by a laboratory certified by the Department for total and fecal coliform (or *E. coli*) bacteria. All results shall be submitted to the Department.

(c) Chemical Quality. After completion of the finished community or NTNC well, representative samples shall be analyzed for all primary and secondary contaminants, including inorganic, radiological and VOCs (regulated and unregulated). These analyses must be performed by a laboratory certified by the Department and a copy of the results shall be submitted to the Department prior to a request for a final inspection. Plans for providing treatment facilities should be provided at this time should any parameter not meet established standards.

Author: Joe Alan Power, Edgar K. Hughes.
Statutory Authority: Code of Alabama 1975, §§ 22-23-1 through 22-24-12.
History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990.
Amended: September 19, 1995 (ER); November 28, 1995; December 8, 1998; effective January 25, 1999; June 7, 2000; December 12, 2005; XXXXX, 2012.

335-7-5-.17 Disinfection Requirements. Disinfection of the water shall be accomplished using a chemical or treatment technique accepted by the Department. Sufficient contact time to allow proper disinfection to take place must be provided as follows:

(a) A chlorine concentration time (CT) of at least 60 shall be provided when the average monthly turbidity is less than five NTU, and

1. The geologic conditions are such that contamination may occur, or

2. The average total coliform count of the raw water exceeds 20 per 100 milliliters but is less than 100 per 100 milliliters for an average of weekly samples for a minimum of four consecutive months, or

3. The average fecal coliform (or *E. coli*) count of the raw water exceeds five per 100 milliliters but is less than 20 per 100 milliliters for an average of weekly samples for a minimum of four consecutive months.

4. Should a disinfectant other than chlorine be used, an equivalent CT time will be provided by the Department.

(b) Water systems shall maintain an adequate level of disinfectant residual in the distribution system at all times. This residual shall be determined and recorded daily from an approved sampling site or other representative point in the system. For systems using chlorine as disinfectant, the residual shall be maintained at a level no less than 0.2 mg/L free chlorine. Should the residual at a sampling site fall below 0.2 mg/L and not be restored within four hours, a treatment technique violation has occurred requiring appropriate public notification within 14 days. Should the disinfectant residual not be restored within 24 hours, microbiological samples representative of the effected area shall be collected. Should these samples show system contamination, an acute violation has resulted, requiring appropriate notification.

Author: Joe Alan Power, Edgar K. Hughes.
Statutory Authority: Code of Alabama 1975, §§ 22-23-1 through 22-24-12.
History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990.
Amended: December 8, 1998; effective: January 25, 1999; June 7, 2000; December 12, 2005; XXXXX, 2012.

335-7-5-.18 Filtration Requirements. Treatment processes to include filtration are required when raw water quality from a groundwater source exceeds any of the following parameters:

(a) Turbidity - 5.0 NTU

(b) Total Coliform - 100 per 100 milliliter of sample

(c) Fecal Coliform (or *E. coli*) - 20 per 100 milliliter of sample

(d) Iron - 0.6 milligrams per liter

(e) Manganese - 0.1 milligrams per liter

Author: Joe Alan Power, Edgar K. Hughes.
Statutory Authority: Code of Alabama 1975, §§ 22-23-1 through 22-24-12.
History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990.
Amended: December 8, 1998; effective: January 25, 1999; June 7, 2000; December 12, 2005; XXXXX, 2012.

335-7-5-.22 Ground Water Rule.

(1) Applicability. This rule applies to all public water systems that use ground water except that it does not apply to public water systems that combine all of their ground water with surface water or with ground water under the direct influence of surface water prior to treatment of surface water or ground water under the influence of surface water. For the purposes of this rule, "ground water system" is defined as any public water system meeting this applicability statement, including consecutive systems receiving finished ground water.

(2) General requirements. Systems subject to this rule must comply with the following requirements:

(a) Sanitary survey information requirements for all ground water systems as described in paragraph (4) of this rule.

(b) Microbial source water monitoring requirements for ground water systems that do not treat all of their ground water to at least 99.99 percent (4-log) treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer as described in paragraph (5) of this rule.

(c) Treatment technique requirements, described in paragraph (6) of this rule, that apply to ground water systems that have fecally contaminated source waters, as determined by source water monitoring conducted under paragraph (5) of this rule, or that have significant deficiencies that are identified by the Department or that are identified by EPA under SDWA Section 1445. A ground water system with fecally contaminated source water or with significant deficiencies subject to the treatment technique requirements of this rule must implement one or more of the following corrective action options: correct all significant deficiencies; provide an alternate source of water; eliminate the source of contamination; or provide treatment that reliably achieves at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer.

(d) Ground water systems that provide at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer are required to conduct compliance monitoring to demonstrate treatment effectiveness, as described in subparagraph (6)(b) of this rule.

(e) If requested by the Department, ground water systems must provide the Department with any existing information that will enable the Department to perform a hydrogeologic sensitivity assessment. For the purposes of this rule, "hydrogeologic sensitivity assessment" is a determination

of whether ground water systems obtain water from hydrogeologically sensitive settings.

(3) Compliance date. Ground water systems must comply, unless otherwise noted, with the requirements of this rule beginning December 1, 2009.

(4) Sanitary surveys for ground water systems.

(a) Ground water systems must provide the Department, at the Department's request, any existing information that will enable the Department to conduct a sanitary survey.

(b) For the purposes of this rule, a "sanitary survey," as conducted by the Department, includes but is not limited to, an onsite review of the water source(s) (identifying sources of contamination by using results of source water assessments or other relevant information where available), facilities, equipment, operation, maintenance, and monitoring compliance of a public water system to evaluate the adequacy of the system, its sources and operations and the distribution of safe drinking water.

(c) The sanitary survey must include an evaluation of the applicable components listed in subparagraphs (c)1. through 8. below:

1. Source,

2. Treatment,

3. Distribution system,

4. Finished water storage,

5. Pumps, pump facilities, and controls,

6. Monitoring, reporting, and data verification,

7. System management and operation, and

8. Operator compliance with Department requirements.

(5) Ground water source microbial monitoring and analytical methods.

(a) Triggered source water monitoring.

1. General requirements. A ground water system must conduct triggered source water monitoring if the conditions identified in subparagraphs (5)(a)1.(i) - (ii) below exist.

(i) The system does not provide at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log

virus inactivation and removal) before or at the first customer for each ground water source; and

(ii) The system is notified that a sample collected under rule 335-7-2-.07 is total coliform-positive and the sample is not invalidated ~~under rule 335-7-2-.07~~by the Department in implementing rule 335-7-2-.07.

2. Sampling requirements. A ground water system must collect, within 24 hours of notification of the total coliform-positive sample, at least one ground water source sample from each ground water source in use at the time the total coliform-positive sample was collected under rule 335-7-2-.07, except as provided in subparagraph (a)2.(ii) of this paragraph.

(i) The Department may extend the 24-hour time limit on a case-by-case basis if the system cannot collect the ground water source water sample within 24 hours due to circumstances beyond its control. In the case of an extension, the Department must specify how much time the system has to collect the sample.

(ii) If approved by the Department, systems with more than one ground water source may meet the requirements of subparagraph (5)(a)2. by sampling a representative ground water source or sources. If directed by the Department, systems must submit for Department approval a triggered source water monitoring plan that identifies one or more ground water sources that are representative of each monitoring site in the system's sample siting plan under rule 335-7-2-.07 that the system intends to use for representative sampling under this paragraph. The system must list the ground water source(s) that will be used for each site and the conditions in which they will use each site.

3. Additional requirements. If the Department does not require corrective action under subparagraph (6)(a)2. of this rule for a fecal indicator-positive source water sample collected under subparagraph (5)(a)2. of this rule that is not invalidated under subparagraph (5)(d) of this rule, the system must collect five additional source water samples from the same source within 24 hours of being notified of the fecal indicator-positive sample.

4. Consecutive and wholesale systems.

(i) In addition to the other requirements of this paragraph, a consecutive ground water system that has a total coliform-positive sample collected under rule 335-7-2-.07 must notify the wholesale system(s) within 24 hours of being notified of the total coliform-positive sample.

(ii) In addition to the other requirements of this paragraph, a wholesale ground water system must comply with subparagraphs (I) and (II) below.

(I) A wholesale ground water system that receives notice from a consecutive system it serves that a sample collected under rule 335-7-2-.07 is total coliform-positive must, within 24 hours of being notified, collect a sample

from its ground water source(s) under subparagraph (5)(a)2. of this rule and analyze it for a fecal indicator under subparagraph (5)(c) of this rule.

(II) If the sample collected under subparagraph (5)(a)2. of this rule is fecal indicator-positive, the wholesale ground water system must notify all consecutive systems served by that ground water source of the fecal indicator source water positive within 24 hours of being notified of the ground water source sample monitoring result and must meet the requirements of subparagraph (5)(a)3. of this rule.

5. Exceptions to the triggered source water monitoring requirements. A ground water system is not required to comply with the source water monitoring requirements of subparagraph (5)(a) of this rule if either of the following conditions exists:

(i) The Department determines, and documents in writing, that the total coliform-positive sample collected under rule 335-7-2-.07 is caused by a distribution system deficiency; or

(ii) The total coliform-positive sample collected under rule 335-7-2-.07 is collected at a location that meets Department criteria for distribution system conditions that will cause total coliform-positive samples.

(b) Assessment source water monitoring. If directed by the Department, ground water systems must conduct assessment source water monitoring that meets Department-determined requirements for such monitoring. A ground water system conducting assessment source water monitoring may use a triggered source water sample collected under subparagraph (5)(a)2. of this rule to meet the requirements of subparagraph (5)(b) of this rule. Department-determined assessment source water monitoring requirements may include:

1. Collection of a total of 12 ground water source samples that represent each month the system provides ground water to the public,

2. Collection of samples from each well unless the system obtains written Department approval to conduct monitoring at one or more wells within the ground water system that are representative of multiple wells used by that system and that draw water from the same hydrogeologic setting,

3. Collection of a standard sample volume of at least 100 mL for fecal indicator analysis regardless of the fecal indicator or analytical method used,

4. Analysis of all ground water source samples using approved EPA methodology found in 40 CFR 141.402(c)(2) and by a laboratory certified by EPA or the Department for the presence of *E. Coli*, enterococci, or coliphage.

5. Collection of ground water source samples at a location prior to any treatment of the ground water source unless the Department approves a sampling location after treatment, and

6. Collection of ground water source samples at the well itself unless the system's configuration does not allow for sampling at the well itself and the Department approves an alternate sampling location that is representative of the water quality of that well.

(c) Analytical methods.

1. A ground water system subject to the source water monitoring requirements of paragraph (5) of this rule must collect a standard sample volume of at least 100 mL for fecal indicator analysis regardless of the fecal indicator or analytical method used.

2. A ground water system must analyze all ground water source samples collected under paragraph (5) of this rule using approved EPA methodology found in 40 CFR 141.402(c)(2) and by a laboratory certified by EPA or the Department for the presence of *E. Coli*, enterococci, or coliphage.

(d) Invalidation of a fecal indicator-positive ground water source sample.

1. A ground water system may obtain Department invalidation of a fecal indicator-positive ground water source sample collected under subparagraph (5)(a) of this rule only under the conditions specified in subparagraph (5)(d)1.(i) - (ii) of this rule.

(i) The system provides the Department with written notice from the laboratory that improper sample analysis occurred; or

(ii) The Department determines and documents in writing that there is substantial evidence that a fecal indicator-positive ground water source sample is not related to source water quality.

2. If the Department invalidates a fecal indicator-positive ground water source sample, the ground water system must collect another source water sample under subparagraph (5)(a) of this rule within 24 hours of being notified by the Department of its invalidation decision and have it analyzed for the same fecal indicator using the analytical methods in subparagraph (5)(c) of this rule. The Department may extend the 24-hour time limit on a case-by-case basis if the system cannot collect the source water sample within 24 hours due to circumstances beyond its control. In the case of an extension, the Department will specify how much time the system has to collect the sample.

(e) Sampling location.

1. Any ground water source sample required under subparagraph (5)(a) of this rule must be collected at a location prior to any treatment of the ground water source unless the Department approves a sampling location after treatment.

2. If the system's configuration does not allow for sampling at the well itself, the system may collect a sample at a Department-approved location to meet the requirements of subparagraph (5)(a) of this rule if the sample is representative of the water quality of that well.

(f) New sources. If directed by the Department, a ground water system that places a new ground water source into service after November 30, 2009, must conduct assessment source water monitoring under subparagraph (5)(b) of this rule. If directed by the Department, the system must begin monitoring before the ground water source is used to provide water to the public.

(g) Public notification. A ground water system with a ground water source sample collected under subparagraph (5)(a) or (b) of this rule that is fecal indicator-positive and that is not invalidated under subparagraph (5)(d) of this rule, including consecutive systems served by the ground water source, must conduct public notification under 335-7-2-.21(1)(f).

(h) Monitoring violations. Failure to meet the requirements of subparagraphs (5)(a) – (f) of this rule is a monitoring violation and requires the ground water system to provide public notification under subparagraphs 335-7-2-.21(4)(a) - (d).

(6) Treatment technique requirements for ground water systems.

(a) Ground water systems with significant deficiencies or source water fecal contamination.

1. The treatment technique requirements of this rule must be met by ground water systems when a significant deficiency is identified or when a ground water source sample collected under subparagraph (5)(a)3. of this rule is fecal indicator-positive.

2. If directed by the Department, a ground water system with a ground water source sample collected under subparagraphs (5)(a)2., (5)(a)4., or (5)(b) of this rule that is fecal indicator-positive must comply with the treatment technique requirements of this rule.

3. When a significant deficiency is identified at a public water system that uses both ground water and surface water or ground water under the direct influence of surface water, the system must comply with provisions of this paragraph except in cases where the Department determines that the significant deficiency is in a portion of the distribution system that is served solely by surface water or ground water under the direct influence of surface water.

4. Unless the Department directs the ground water system to implement a specific corrective action, the ground water system must consult with the Department regarding the appropriate corrective action within 30 days of receiving written notice from the Department of a significant deficiency,

written notice from a laboratory that a ground water source sample collected under subparagraph (5)(a)3. of this rule was found to be fecal indicator-positive, or direction from the Department that a fecal indicator's positive collected under subparagraphs (5)(a)2., (5)(a)4., or (5)(b) of this rule requires corrective action. For the purposes of this rule, significant deficiencies include, but are not limited to, defects in design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system that the Department determines to be causing, or have potential for causing, the introduction of contamination into the water delivered to consumers.

5. Within 120 days (or earlier if directed by the Department) of receiving written notification from the Department of a significant deficiency, written notice from a laboratory that a ground water source sample collected under subparagraph (5)(a)3. of this rule was found to be fecal indicator-positive, or direction from the Department that a fecal indicator-positive sample collected under subparagraphs (5)(a)2., (5)(a)4., or (5)(b) of this rule requires corrective action, the ground water system must either:

(i) Have completed corrective action in accordance with applicable Department plan review processes or other Department guidance or direction, if any, including Department-specified interim measures; or

(ii) Be in compliance with a Department-approved corrective action plan and schedule subject to the conditions specified in subparagraphs (6)(a)5.(ii)(I) through (II) below.

(I) Any subsequent modifications to a Department-approved corrective action plan and schedule must also be approved by the Department.

(II) If the Department specifies interim measures for protection of the public health pending Department approval of the corrective action plan and schedule or pending completion of the corrective action plan, the system must comply with these interim measures as well as with any schedule specified by the Department.

6. Corrective action alternatives. Ground water systems that meet the conditions of subparagraph (6)(a)1. or 2. of this rule must implement one or more of the following corrective action alternatives:

(i) Correct all significant deficiencies;

(ii) Provide an alternate source of water;

(iii) Eliminate the source of contamination; or

(iv) Provide treatment that reliably achieves at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for the ground water source.

7. Special notice to the public of significant deficiencies or source water fecal contamination.

(i) In addition to the applicable public notification requirements of 335-7-2-.21(1)(f), a community ground water system that receives notice from the Department of a significant deficiency or notification of a fecal indicator-positive ground water source sample that is not invalidated by the Department under subparagraph (5)(d) of this rule must inform the public served by the water system under rule 335-7-14-.04(6) of the fecal indicator-positive source sample or of any significant deficiency that has not been corrected. The system must continue to inform the public annually until the significant deficiency is corrected or the fecal contamination in the ground water source is determined by the Department to be corrected under subparagraph (6)(a)5. of this rule.

(ii) In addition to the applicable public notification requirements of 335-7-2-.21(1)(f), a non-community ground water system that receives notice from the Department of a significant deficiency must inform the public served by the water system in a manner approved by the Department of any significant deficiency that has not been corrected within 12 months of being notified by the Department, or earlier if directed by the Department. The system must continue to inform the public annually until the significant deficiency is corrected. The information must include:

(I) The nature of the significant deficiency and the date the significant deficiency was identified by the Department;

(II) The Department-approved plan and schedule for correction of the significant deficiency, including interim measures, progress to date, and any interim measures completed; and

(III) For systems with a large proportion of non-English speaking consumers, as determined by the Department, information in the appropriate language(s) regarding the importance of the notice or a telephone number or address where consumers may contact the system to obtain a translated copy of the notice or assistance in the appropriate language.

(iii) If directed by the Department, a non-community water system with significant deficiencies that have been corrected must inform its customers of the significant deficiencies, how the deficiencies were corrected, and the dates of correction under subparagraph (6)(a)7.(ii) of this rule.

(b) Compliance monitoring.

1. Existing ground water sources. A ground water system that is not required to meet the source water monitoring requirements of this rule for any ground water source because it provides at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for any ground water source before December 1, 2009, must notify the Department in writing that it provides at least 4-log treatment of viruses (using inactivation, removal,

or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for the specified ground water source and begin compliance monitoring in accordance with subparagraph (6)(b)3. of this rule by December 1, 2009. Notification to the Department must include engineering, operational, or other information that the Department requests to evaluate the submission. If the system subsequently discontinues 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for a ground water source, the system must conduct ground water source monitoring as required under paragraph (5) of this rule.

2. New ground water sources. A ground water system that places a ground water source in service after November 30, 2009, that is not required to meet the source water monitoring requirements of this rule because the system provides at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for the ground water source must comply with the requirements of subparagraphs (6)(b)2.(i) - (iii) below.

(i) The system must notify the Department in writing that it provides at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for the ground water source. Notification to the Department must include engineering, operational, or other information that the Department requests to evaluate the submission.

(ii) The system must conduct compliance monitoring as required under subparagraph (6)(b)3. of this rule within 30 days of placing the source in service.

(iii) The system must conduct ground water source monitoring under paragraph (5) of this rule if the system subsequently discontinues 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for the ground water source.

3. Monitoring requirements. A ground water system subject to the requirements of subparagraphs (6)(a), (6)(b)1. or (6)(b)2. of this rule must monitor the effectiveness and reliability of treatment for that ground water source before or at the first customer as follows:

(i) Chemical disinfection.

(I) Ground water systems serving greater than 3,300 people. A ground water system that serves greater than 3,300 people must continuously monitor the residual disinfectant concentration using approved EPA methodology found in 40 CFR 141.74(a)(2) ~~procedures established by EPA~~ at a location approved by the Department and must record the lowest residual disinfectant concentration each day that water from the ground water source is served to the public. The ground water system must maintain the Department-

determined residual disinfectant concentration every day the ground water system serves water from the ground water source to the public. If there is a failure in the continuous monitoring equipment, the ground water system must conduct grab sampling every four hours until the continuous monitoring equipment is returned to service. The system must resume continuous residual disinfectant monitoring within 14 days.

(II) Ground water systems serving 3,300 or fewer people. A ground water system that serves 3,300 or fewer people must monitor the residual disinfectant concentration using approved EPA methodology found in 40 CFR 141.74(a)(2) ~~procedures established by EPA~~ at a location approved by the Department and record the residual disinfection concentration each day that water from the ground water source is served to the public. The ground water system must maintain the Department-determined residual disinfectant concentration every day the ground water system serves water from the ground water source to the public. The ground water system must take a daily grab sample during the hour of peak flow or at another time specified by the Department. If any daily grab sample measurement falls below the Department-determined residual disinfectant concentration, the ground water system must take follow-up samples every four hours until the residual disinfectant concentration is restored to the Department-determined level. Alternatively, a ground water system that serves 3,300 or fewer people may monitor continuously and meet the requirements of subparagraph (6)(b)3.(i)(I) of this rule.

(ii) Membrane filtration. A ground water system that uses membrane filtration to meet the requirements of this rule must monitor the membrane filtration process in accordance with all Department-specified monitoring requirements and must operate the membrane filtration in accordance with all Department-specified compliance requirements. A ground water system that uses membrane filtration is in compliance with the requirement to achieve at least 4-log removal of viruses when:

(I) The membrane has an absolute molecular weight cut-off (MWCO), or an alternate parameter that describes the exclusion characteristics of the membrane, that can reliably achieve at least 4-log removal of viruses;

(II) The membrane process is operated in accordance with Department-specified compliance requirements; and

(III) The integrity of the membrane is intact.

(iii) Alternative treatment. A ground water system that uses a Department-approved alternative treatment to meet the requirements of this rule by providing at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer must:

(I) Monitor the alternative treatment in accordance with all Department-specified monitoring requirements; and

(II) Operate the alternative treatment in accordance with all compliance requirements that the Department determines to be necessary to achieve at least 4-log treatment of viruses.

(c) Discontinuing treatment. A ground water system may discontinue 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for a ground water source if the Department determines and documents in writing that 4-log treatment of viruses is no longer necessary for that ground water source. A system that discontinues 4-log treatment of viruses is subject to the source water monitoring and analytical methods requirements of paragraph (5) of this rule.

(d) Failure to meet the monitoring requirements of subparagraph (6)(b) of this rule is a monitoring violation and requires the ground water system to provide public notification under subparagraphs 335-7-2-.21(4)(a) - (d).

(7) Treatment technique violations for ground water systems.

(a) A ground water system with a significant deficiency is in violation of the treatment technique requirement if, within 120 days (or earlier if directed by the Department) of receiving written notice from the Department of the significant deficiency, the system:

1. Does not complete corrective action in accordance with any applicable Department plan review processes or other Department guidance and direction, including Department specified interim actions and measures, or

2. Is not in compliance with a Department-approved corrective action plan and schedule.

(b) Unless the Department invalidates a fecal indicator-positive ground water source sample under subparagraph (5)(d) of this rule a ground water system is in violation of the treatment technique requirement if, within 120 days (or earlier if directed by the Department) of meeting the conditions of subparagraph (6)(a)1. or subparagraph (6)(a)2. of this rule the system:

1. Does not complete corrective action in accordance with any applicable Department plan review processes or other Department guidance and direction, including Department-specified interim measures, or

2. Is not in compliance with a Department-approved corrective action plan and schedule.

(c) A ground water system subject to the requirements of subparagraph (6)(b)3. of this rule that fails to maintain at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for a ground water source is in violation of the treatment technique requirement if

the failure is not corrected within four hours of determining the system is not maintaining at least 4-log treatment of viruses before or at the first customer.

(d) Ground water system must give public notification under subparagraphs 335-7-2-.21(1)(a) - (e) for the treatment technique violations specified in subparagraphs (7)(a), (7)(b) and (7)(c) of this rule.

Author: Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: May 26, 2009; XXXXX, 2012.

335-7-6-.03 Source Selection Report. Any applicant for a permit proposing to utilize surface water or groundwater under the influence of surface water as a source for a drinking water treatment plant shall file a report in electronic format, unless paper format is approved by the Department in advanced, including the following:

(a) A map of the proposed source showing the drainage area in the vicinity of the proposed intake.

(b) Information showing the raw water source meets raw water quality criteria and has a use classification of public water supply in accordance with ADEM Admin. Code chapter 335-6-11.

(c) The system must provide verification that the source has adequate capacity at all times, even during drought years, to meet the proposed capacity of the water treatment plant.

(d) An approved source water assessment meeting the requirements of ADEM Admin. Code r. 335-7-15.

(e) Twelve months of raw water data, including the following:

1. weekly results of turbidity, temperature, pH, alkalinity, iron, manganese and color,

2. monthly results for total coliform and *E. coli* bacteria,

3. quarterly analysis results from a certified laboratory for all contaminants identified in the primary and secondary standards and any listed unregulated contaminants,

4. quarterly analysis indicating the potential maximum TTHM and HAA5 levels, and

5. monthly analyses of the TOC levels, *Cryptosporidium* and *Giardia*.

(f) A study showing the source will be responsive to the treatment outlined in the engineering report and that the expected finished water will comply with all primary and secondary standards.

(g) The Department's written concurrence of this report shall be received by the applicant prior to the submittal of a permit application package for construction of the intake.

Author: Edgar K. Hughes, Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.

History: Repealed: November 7, 2005; Readopted: December 12, 2005; January 22, 2008; XXXXX. 2012.

335-7-6-.04 Treatment Requirements. The treatment provided for all surface water and ground water under the influence of surface water must meet the following requirements:

(a) Conventional surface water treatment shall be required at all surface water or ground water under the influence of surface water treatment facilities, unless otherwise approved by the Department.

(b) Provisions to bypass various processes in the treatment are prohibited, unless approved by the Department.

(c) Treatment provided shall produce water meeting both primary and secondary standards with a goal for particulate removal to result in a clarified water turbidity less than 2.0 NTU when the raw water turbidity level is greater than 10.0 NTU, a clarified water turbidity level less than 1.0 NTU when the raw water turbidity level is less than or equal to 10.0 NTU and a filtered water turbidity level less than 0.10 NTU, and be free of *Giardia lamblia*, *Cryptosporidium* oocysts, viruses, heterotrophic plate count bacteria, and Legionella.

(d) No exemptions from the filtration and disinfection processes are allowed.

(e) The treatment requirements consist of installing and properly operating water treatment processes which achieve the following:

1. At least 99.9 percent removal and/or inactivation of *Giardia lamblia* cyst and at least 99 percent removal of *Cryptosporidium* oocyst prior to service of the first customer, and

2. 99.99 percent removal and/or inactivation of viruses prior to service of the first customer.

3. Drinking water meeting all primary and secondary standards.

(f) Plants with a raw water source receiving treated or untreated wastewater or having a watershed with high contaminant potential may be required to install equipment to measure, count and record particle size of particles passing through plant filters to demonstrate compliance with the requirements of 335-7-6-.04(e).

Author: Edgar K. Hughes.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: Repealed: November 7, 2005, Readopted: December 12, 2005; XXXXX, 2012.

335-7-6-.05 Surface Water Intake Structures. All surface water intake structures that are permitted for construction after December 31, 2005 must meet the following requirements, unless a waiver is granted by the Department:

(a) Provide for the withdrawal of water from more than one level unless written approval is obtained from the Department.

(b) All motors and electrical controls must be located above grade and the 100 yearflood level except when submersible pumps are approved by the Department.

(c) Structures must be equipped with removable or traveling screens before the pump suction well or equipped with other means for clearing the screens.

(d) A minimum of two pumps sized to meet the treatment plant design capacity are required. Intakes with more than two pumps must be able to meet the treatment plant design capacity with the largest pump out of service.

(e) Incorporate into the design provisions for preventing surge or water hammer damage when necessary.

(f) Equip discharge piping from the raw water pumping station with a device capable of measuring and totaling the flow.

(g) Provide ample space in the interior of the raw water pumping station for adequate maintenance.

(h) Structures should have adequate lighting to provide for the necessary observation of equipment operation.

Author: Edgar K. Hughes.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: Repealed: November 7, 2005; Readopted: December 12, 2005; XXXX, 2012.

335-7-6-.15 Lighting and Power Requirements.

(1) Proper illumination shall be available to allow evaluation of treatment processes at the water treatment plant at all times.

(2) New community treatment facilities permitted for construction after December 31, 2005 shall have sufficient auxiliary power capacity available to operate essential equipment at the plant.

(3) All community surface water treatment facilities shall have sufficient auxiliary power available to operate essential equipment no later than December 31, 2010.

(a) Essential equipment includes, but is not limited to, raw water pumps, laboratory testing equipment, monitoring equipment, and high service pumps needed to meet expected customer demand for finished drinking water during emergency conditions.

(b) If a water system owns more than one water treatment facility, it can designate one facility as the primary facility and this facility must meet the requirements of this paragraph and be capable of supplying the entire distribution system during emergency conditions.

(c) The auxiliary power requirement can be met by having an on-site generator or an equivalent design approved by the Department.

Author: Edgar K. Hughes.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: Repealed: November 7, 2005; Readopted: December 12, 2005.
Amended: January 18, 2011; XXXXX, 2012.

335-7-7-.03 Distribution Facilities Design And Construction Requirements. To prevent contamination of the drinking water, the following are required in the design and construction of drinking water facilities:

(a) Water Main Facility Requirements:

1. Water mains shall be constructed of materials which will neither contaminate nor allow deterioration of the water quality.

2. Gaskets, O-rings, and other products used for joining pipe, setting meters or valves, or other appurtenances shall not be made nor coated with materials which will support microbiological growth.

3. Water mains permitted by the Department shall be properly pressure tested and disinfected after installation. Copies of the pressure test and bacteriological results showing absence of coliform shall be provided to the Department along with a request for a final inspection prior to the setting of meters to serve customers on these lines.

4. Unless otherwise approved by the Department, the following applies when installing water mains after January 1, 2013;

(i) A minimum horizontal separation of five feet shall be maintained between water mains and sanitary sewer mains.

(ii) When water and sewer main crossings are necessary, place a continuous casing around one of the mains to allow a minimum five-foot separation between each end of the cased and uncased main.

(iii) Where possible, install the water main such that the top elevation of the sewer main is a minimum of 18 inches below the bottom elevation of the water main.

(iv) Unless adequately cased to protect against cross contamination, do not install any water main such that it comes in contact with any part of a sewer manhole, septic tank field lines, or soil saturated with organic solvents or gasoline.

(b) Pumping stations shall be located or constructed so that the pumps and piping will be protected from flooding and shall be designed and operated in such a manner as to allow satisfactory pressure and service to customers on the suction and discharge side of the station.

(c) Finished Water Storage Requirements:

1. An uncovered finished water storage reservoir used to store water that will undergo no further treatment except residual disinfection and is open to the atmosphere is prohibited.

2. All finished water storage structures shall have suitable water tight roofs, hatches, and covers to exclude outside contamination.

3. Access manholes shall be provided with a locking mechanism.

4. Clearwells and pumping sumps associated with surface treatment plants may not be constructed adjacent to unfinished water units when the compartments are separated by a single wall.

5. All metal water storage facilities shall be protected by paints or other protective coatings. Inside paint systems shall not use lead primer but shall otherwise conform to AWWA D102 or latest revision Coating Steel Water-Storage Tanks or other standards accepted by the Department.

6. Protective coatings shall be used and applied in such a manner as to prevent contamination of the water in contact with these coatings.

7. Storage tanks permitted after December 31, 2006 shall meet the following requirements:

(i) Shall provide for a minimum fluctuation of 50% in water height during all normal operating conditions. Deviations must have prior written approval from the Department. Deviations from this requirement must be requested in writing. The request must include reasons the deviation should be granted and the deviation cannot be made until written approval is received by the Department.

(ii) Shall minimize water age and shall provide adequate mixing of water. Inlet pipe diameters or wet risers greater than 36 inches are not allowed unless approved by the Department. The request must be in writing and include reasons for the larger diameter and include design calculations showing that the tank will mix properly and water age will be minimized.

(iii) Shall be designed to allow the water storage tank to be removed from service for cleaning and repair as required by the Water Storage Tank Maintenance section of this chapter.

(iv) Shall be properly disinfected and upon refilling, two bacteriological samples must be collected showing absence of coliform prior to use. Documentation of the disinfection and bacteriological analyses information must be provided to the Department along with a request to place the tank into service.

Author: Joe Alan Power, Edgar Hughes, Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990; effective December 5, 1990.
Amended: June 7, 2000; January 28, 2004; December 12, 2005; January 22, 2008; XXXXX, 2012.

335-7-10-.05 Records. The following records shall be maintained by community and NTNC water systems, unless otherwise specified:

(a) Operational records on which all required water quality control tests are recorded shall be maintained by the water system for review by the Department during sanitary surveys for no less than three years or until the next sanitary survey, whichever is longer.

(b) For systems utilizing surface water or ground water under the influence of surface water, daily log sheets shall be completed for each shift. These records shall be maintained for five years for inspection by the Department.

(c) Records of bacteriological or microbiological analyses made pursuant to this part shall be kept for not less than five years or as indicated elsewhere in these regulations. Records of chemical analyses made pursuant to this part shall be kept for not less than ten years. Actual laboratory reports may be kept, or data may be transferred to tabular summaries, provided that the following information is included:

1. The date, place, and time of sampling, and the name of the person who collected the sample;

2. Identification of the sample as to whether it was a routine distribution system sample, check sample, raw or process water sample or other special purpose sample;

3. The date of analysis;

4. The laboratory and person responsible for performing analysis;

5. The analytical technique/method used; and

6. The analysis results.

(d) Each water system shall maintain a complaint file including the date, location, type of complaint and action taken. Records shall be maintained for no less than three years after a complaint is received.

(e) Records of action taken by the system to correct violations of primary drinking water regulations shall be kept for a period of not less than three years after the last action taken with respect to the particular violation involved.

(f) Copies of any written reports, summaries or communications relating to sanitary surveys of the system, annual inspection or other site visit conducted by the system itself, by a private consultant, or by any local, state or

federal agency shall be kept for a period not less than ten years after completion of the event involved.

(g) Records concerning an exemption granted to the system shall be kept for a period ending not less than five years following the expiration of such exemption.

(h) Any records or reports pertaining to the quality of water or operation of the water supply system shall be furnished to the Department upon request and must be available for review by the public.

(i) Each system required to monitor for disinfection byproducts or disinfectant residuals is required to develop and implement a monitoring plan. The system must maintain the plan and make it available for inspection by the Department and the general public no later than December 31, 2000. Community and NTNC systems utilizing surface sources or groundwater under the direct influence of surface water must submit a copy of the monitoring plan to the Department no later December 31, 2000. The Department may also require the plan to be submitted by any other system. After review, the Department may require changes in any plan elements. The plan must include at least the specific locations, a map with the locations marked and schedules for collecting samples for any disinfection byproducts or disinfectants and how the system will calculate compliance with MCLs, MRDLs, and treatment techniques for those contaminants. Failure to monitor in accordance with an approved monitoring plan is a violation and public notification is required according to the provisions of rule 335-7-2-.21.

1. Beginning July 1, 2007, all community and NTNC systems utilizing surface water and ground water under the influence of surface water must maintain a copy of the system's current monitoring plan on file with the Department. Changes to the monitoring plan must be approved by the Department and a copy submitted to the Department before conducting monitoring under the revised plan. The monitoring plan must be modified to reflect changes in treatment, distribution system operations and layout (including new service areas), or other factors that may affect TTHM or HAA5 formation.

2. The Department may require the monitoring plan to be submitted by water systems other than community and NTNC systems utilizing surface water or ground water under the influence of surface water.

3. After review, the Department may require changes in any plan elements.

4. The plan must include, as a minimum, the sample locations, a map with the locations marked, the schedules for collecting samples for any disinfection byproducts or disinfectants, and how the system will calculate compliance with MCLs, MRDLs, and treatment techniques for those contaminants.

5. Beginning January 1, 2012, if a monitoring plan is changed, the sites with the lowest LRAA must be replaced with new locations that reflect the current distribution system locations with expected high TTHM or HAA5 levels.

6. Failure to monitor in accordance with an approved monitoring plan is a violation and public notification is required according to the provisions rule 335-7-2-.21.

(j) Systems that were required to perform disinfection profiling and/or disinfection benchmarking must keep results of the profile, including raw data and analysis, indefinitely.

(k) A record of the company name, telephone number, address and chemicals supplied must be maintained in a file at the treatment plant. All chemical manufacturers supplying chemicals to the treatment plant for the past two years shall be maintained on the list.

(l) Copies of all monitoring plans shall be kept for the same period of time as the records of monitoring results taken under the plan are required to be kept, except as specified elsewhere in these regulations.

(m) Systems must keep the results from each round of source water monitoring for cryptosporidium until the next round of source water monitoring is completed, but in no case shall records be kept for less than 3 years.

(n) Systems must keep any notification to the Department that they will not conduct source water monitoring due to meeting the requirements of rule 335-7-2-.17 (at least 5.5-log treatment for *Cryptosporidium*) for three years.

(o) Systems must keep the results of treatment monitoring associated with microbial toolbox options in rule 335-7-6-.21 until the next sanitary survey or three years, which ever is longer.

(p) Systems must report to the Department in accordance with the following table for any microbial toolbox option used to comply with treatment requirements in rule 335-7-6-.21. Alternatively, the Department may approve a system to certify operation within required parameters for treatment credit rather than reporting monthly operational data for toolbox options.

Microbial Toolbox Reporting Requirements		
Toolbox Option	**Required Information**	**Schedule**

Microbial Toolbox Reporting Requirements

Toolbox Option	Required Information	Schedule
Watershed control program (WCP)	(i) Notice of intention to develop a new or continue an existing watershed control program.	No later than two years before the applicable treatment compliance date in 335-7-6-.20.
	(ii) Watershed control plan	No later than one year before the applicable treatment compliance date in 335-7-6-.20.
	(iii) Annual watershed control program status report	Every 12 months, beginning one year after the applicable treatment compliance date in 335-7-6-.20.
	(iv) Watershed sanitary survey report	Every three years beginning three years after the applicable treatment compliance date in 335-7-6-.20.
Alternative source/intake management	Verification that system has relocated the intake or adopted the intake withdrawal procedure reflected in monitoring results.	No later than the applicable treatment compliance date in 335-7-6-.20.
Pre-sedimentation	Monthly verification of the following: (i) Continuous basin operation. (ii) Treatment of 100% of the flow. (iii) Continuous addition of a coagulant. (iv) At least 0.5-log mean reduction of influent turbidity or compliance with alternative Department-approved performance criteria.	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.
Two-stage lime softening	Monthly verification of the following: (i) Chemical addition and hardness precipitation occurred in two separate and sequential softening stages prior to filtration. (ii) Both stages treated 100% of the plant flow.	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.

Microbial Toolbox Reporting Requirements

Toolbox Option	Required Information	Schedule
Bank filtration	(i) Initial demonstration of the following: (A) Unconsolidated, predominantly sandy aquifer (B) Setback distance of at least 25 ft. (0.5-log credit) or 50 ft. (1.0-log credit).	No later than the applicable treatment compliance date in 335-7-6-.20.
	(ii) If monthly average of daily max turbidity is greater than 1 NTU then system must report result and submit an assessment of the cause.	Report within 30 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.
Combined filter performance	Monthly verification of combined filter effluent (CFE) turbidity levels less than or equal to 0.15 NTU in at least 95 percent of the 4 hour CFE measurements taken each month.	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.
Individual filter performance	Monthly verification of the following: (i) Individual filter effluent (IFE) turbidity levels less than or equal to 0.15 NTU in at least 95 percent of samples each month in each filter (ii) No individual filter greater than 0.3 NTU in two consecutive readings 15 minutes apart.	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.
Demonstration of performance	(i) Results from testing following a Department approved protocol.	No later than the applicable treatment compliance date in 335-7-6-.20.
	(ii) As required by the Department, monthly verification of operation within conditions of Department approval for demonstration of performance credit.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.

Microbial Toolbox Reporting Requirements

Toolbox Option	Required Information	Schedule
Bag filters and cartridge filters	(i) Demonstration that the following criteria are met: (A) Process meets the definition of bag or cartridge filtration. (B) Removal efficiency established through challenge testing that meets the criteria in rule 335-7-6-.25.	No later than the applicable treatment compliance date in 335-7-6-.20.
	(ii) Monthly verification that 100% of plant flow was filtered.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.
Membrane filtration	(i) Results of verification testing demonstrating the following: (A) Removal efficiency established through challenge testing that meets criteria in this subpart. (B) Integrity test method and parameters, including resolution, sensitivity, test frequency, control limits, and associated baseline.	No later than the applicable treatment compliance date in 335-7-6-.20.
	(ii) Monthly report summarizing the following: (A) All direct integrity tests above the control limit; (B) If applicable, any turbidity or alternative Department-approved indirect integrity monitoring results triggering direct integrity testing and the corrective action that was taken.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.
Second stage filtration	Monthly verification that 100% of flow was filtered through both stages and that first stage was preceded by a coagulation step.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.
Slow sand filtration (as secondary filter)	Monthly verification that both a slow sand filter and a preceding separate stage of filtration treated 100% of flow.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.

Microbial Toolbox Reporting Requirements

Toolbox Option	Required Information	Schedule
Chlorine dioxide	Summary of CT values for each day as described in 335-7-6-.26.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.
Ozone	Summary of CT values for each day as described in 335-7-6-.26.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.
UV	(i) Validation test results demonstrating operating conditions that achieve required UV dose.	No later than the applicable treatment compliance date in 335-7-6-.20.
	(ii) Monthly report summarizing the percentage of water entering the distribution system that was not treated by UV reactors operating within validated conditions for the required dose as specified in 335-7-6-.26(4).	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 335-7-6-.20.

(q) A ground water system regulated under the ground water rule (GWR) in rule 335-7-5-.22 must maintain the following information in its records:

1. Documentation of corrective actions. Documentation shall be kept for a period of not less than ten years.

2. Documentation of notice to the public as required under rule 335-7-5-.22(6)(a)7. Documentation shall be kept for a period of not less than three years.

3. Records of decisions under rule 335-7-5-.22(5)(a)5.(ii) and records of invalidation of fecal indicator-positive ground water source samples under rule 335-7-5-.22(5)(d). Documentation shall be kept for a period of not less than five years.

4. For consecutive systems, documentation of notification to the wholesale system(s) of total-coliform positive samples that are not invalidated by the Department in implementing~~under~~ rule 335-7-2-.07. Documentation shall be kept for a period of not less than five years.

5. For systems, including wholesale systems, that are required to perform compliance monitoring under rule 335-7-5-.22(6)(b):

(i) Records of the Department-specified minimum disinfectant residual. Documentation shall be kept for a period of not less than ten years.

(ii) Records of the lowest daily residual disinfectant concentration and records of the date and duration of any failure to maintain the Department-prescribed minimum residual disinfectant concentration for a period of more than four hours. Documentation shall be kept for a period of not less than five years.

(iii) Records of Department-specified compliance requirements for membrane filtration and of parameters specified by the Department for Department-approved alternative treatment and records of the date and duration of any failure to meet the membrane operating, membrane integrity, or alternative treatment operating requirements for more than four hours. Documentation shall be kept for a period of not less than five years.

(r) All water systems that are required to complete a Source Water Assessment per chapter 335-7-15 shall maintain a copy of their current Source Water Assessment for review by the Department during sanitary surveys.

(s) All log sheets shall be filled out legibly using ink. Any correction made shall have a single line drawn through it, initialed by the operator, and the correct entry written near the incorrect entry.

Author: Joe Alan Power, Edgar K. Hughes, Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990, September 19, 1995 (ER); November 28, 1995; effective January 2, 1996. **Amended:** March 12, 2002, May 30, 2003, December 12, 2005, January 22, 2008; May 26, 2009; XXXXX, 2012.

335-7-10-.06 Reports.

(1) The monthly operating report shall be submitted to the Department no later than the tenth of the following month in a format approved by the Department. The report shall contain the results of all required water quality control tests specified in rule 335-7-10-.03 of this chapter, except where individual samples or longer averaging times are specified in this paragraph. The daily minimum disinfection levels shall be reported. When required by the Department, the following shall be provided:

(a) Maximum daily raw, clarified and individual filter effluent turbidity;

(b) The average of the carbon dioxide, color, iron, manganese, total alkalinity, pH and fluoride test results for each day;

(c) Water production records;

(d) Ground water level information;

(e) Filter operation records;

(f) Distribution pressure measurements; and,

(g) Water loss information.

(2) Records of chemical analyses shall be provided to the Department no later than the tenth of the month following the end of the required monitoring period. As a minimum, these reports shall include the location, date and result of each sample collected during the monitoring period. When directed by the Department, the number of samples collected, the quarterly average, the annual average and whether the MCL was exceeded shall be reported.

(3) Systems that are required to meet enhanced coagulation shall also report the alternative criterion that the system is using and the percent TOC removal.

(4) The system shall notify the Department within 24 hours of any instance of filtered surface water exceeding 1.0 NTU or finished ground water turbidity exceeding 5.0 NTUs; the disinfectant residual in the system being less than 0.2 mg/l for free chlorine or 0.5 mg/L for chloramine; or a waterborne disease outbreak potential.

(5) Any records or reports pertaining to the quality of water or operation of the water supply system shall be furnished to the Department upon request and must be available for public review.

(6) The water system shall maintain a copy of each monthly operating report. The report must be signed by a certified operator. This copy shall be readily available for inspection by the Department.

(7) Any operational evaluation level that was exceeded must be reported within 10 days after the end of the quarter. In addition, the system must report the date, location and the calculated TTHM and HAA5 levels for each site that exceeded the operational evaluation level.

(8) Any surface water or ground water under the influence of surface water system that is seeking to qualify for or remain on reduced TTHM and HAA5 monitoring must report the following source water TOC information:

(a) The number of TOC samples taken each month during the last quarter including the date and result of each sample.

(b) The quarterly average of monthly samples taken during last quarter or the results of the quarterly sample.

(c) The running annual average (RAA) of quarterly averages from the past four quarters.

(d) Whether the RAA exceeded 4.0 mg/L.

(9) Each membrane filtration unit shall undergo a direct integrity test each day the unit is in operation. The results of the test shall be reported monthly to the Department.

(10) Any membrane filtration unit exceeding 0.15 NTU for two consecutive readings, 15 minutes apart, shall be removed from service and undergo direct integrity testing. Additionally, any membrane unit that fails a direct integrity test shall be removed from service.

(a) Any unit that fails a direct integrity test shall be removed from service, repaired and not returned to service unit it passes two consecutive direct integrity tests.

(b) The Department shall be notified within 48 hours of any membrane unit that exceeds 0.15 NTU or fails a direct integrity test. This information must be reported on the system's monthly operational report along with the date and time of when the Department was notified.

(c) Any membrane unit that exceeds 0.15 NTU for 2 consecutive readings, but passes its direct integrity test shall not be returned to service until the unit is able to produce water with a turbidity of less than 0.15 NTU.

[**Note:** Paragraphs (9) and (10) above apply only to surface water and ground water under the influence of surface water systems. Compliance monitoring reporting for ground water systems is covered in paragraph (11) below.]

(11) Ground water systems must submit the following to the Department:

(a) A ground water system conducting compliance monitoring under rule 335-7-5-.22(6)(b) must notify the Department any time the system fails to meet any Department-specified requirements including, but not limited to, minimum residual disinfectant concentration, membrane operating criteria or membrane integrity, and alternative treatment operating criteria, if operation in accordance with the criteria or requirements is not restored within four hours. The ground water system must notify the Department as soon as possible, but in no case later than the end of the next business day.

(b) After completing any corrective action under rule 335-7-5-.22(6)(a), a ground water system must notify the Department within 30 days of completion of the corrective action.

(c) If a ground water system subject to the requirements of rule 335-7-5-.22(5)(a) does not conduct source water monitoring under rule 335-7-5-.22(5)(a)5.(ii), the system must provide documentation to the Department within 30 days of the total coliform positive sample that it met the Department criteria.

(12) Wholesale systems (with the exception of systems with only ground water sources) shall submit the results of TTHM and HAA5 sampling at or near all points of delivery to consecutive systems. Consecutive systems who also sell to other consecutive systems shall submit the results of TTHM and HAA5 sampling at or near all points of delivery to other consecutive systems. These results shall be submitted with the routine sample results required by ADEM Admin. Code r. 335-7-2-.12 (Stage 2 Disinfection Byproducts).

(a) The number of sample locations can be reduced by submitting justification to the Department that the point of delivery is not contributing to elevated TTHM and/or HAA5 levels in the downstream consecutive system(s).

(b) If all consecutive systems served by the wholesale system are in compliance with the TTHM and/or HAA5 MCLs in accordance with paragraph 335-7-2-.12(a) for four consecutive quarters, then the systems can request a reduction or end of the monitoring.

(13) Reports submitted in accordance with this rule shall meet the following requirements:

(a) Monthly operating reports required by paragraph (1) or records of chemical analysis required by paragraph (2) above, shall comply with the following:

(i) Water systems serving a population of 3,300 or greater shall submit the reports in an electronic format approved by the Department for all reports dated January 1, 2013 or later

(ii) Water systems serving a population of less than 3,300 shall submit the reports in an electronic format approved by the Department for all reports dated January 1, 2014 or later

(iii) A waiver can be granted by the Department if requested in advance.

(b) All other reports may be submitted in an electronic or paper format approved by the Department.

Author: Joe Alan Power, Edgar K. Hughes, Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.
History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990; effective December 5, 1990.
Amended: December 12, 2005, January 22, 2008; May 26, 2009; XXXXX, 2012.

335-7-11-.11 Action Level Non-Compliance. Any water system with an action level exceeding the compliance limit for lead or copper shall complete the following requirements in the manner and by the deadline established by these regulations:

(a) Water systems must install and maintain adequate corrosion control treatment equipment to ensure that the lead/copper compliance limit can be met. The ~~department~~Department may require that an in-depth study be completed to determine the optimum corrosion control process for the system.

(b) Systems installing corrosion control treatment requirements shall monitor the parameters at the frequency established by these regulations. All parameters established must be reported on the monthly operation data reports by the 10th of the following month. Exceedance of the established values which indicate optimum corrosion control is considered a treatment technique violation.

(c) The lead and copper level in the source water serving the areas exceeding the compliance limit must be monitored to determine compliance with the primary drinking water standards in chapter 335-7-2. The source must be taken out of service and provided with satisfactory treatment, approved by the Department, to reduce the lead or copper level to meet these drinking water standards.

(d) A system that fails to meet the lead/copper compliance limit after the installation of corrosion control shall develop a program to replace lead service lines. All lead service lines in the system shall be identified and at least 7% replaced on an annual basis. More rapid replacement may be required by the Department.

(e) Systems which exceed the lead compliance limit shall deliver public educational materials according to the methods specified in the regulations. The language used in this public education notice must include specific language contained in the Appendix C.

Author: Joe Alan Power, Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.
History: Adopted: September 23, 1992; Amended: September 19, 1995 (ER); November 28, 1995. Effective: January 2, 1996.
Amended: March 12, 2002; January 22, 2008; XXXXX, 2012.

335-7-11-.12 Corrosion Control Treatment Requirement. Any water system which has been deemed to have optimized corrosion control and has corrosion control treatment in place shall continue to operate and maintain treatment to ensure that optimal corrosion control is maintained.

(a) All water systems with an action level which exceeds a lead or copper compliance limit and any new drinking water source proposed for use after the effective date of these regulations shall install and properly operate optimum corrosion control processes continuously to reduce the potential for lead or copper exposure by the consumers. Within six months of exceeding the compliance limit a system shall provide a detailed report indicating the process and equipment to be used to provide corrosion control treatment. Installation and start up of the equipment must be completed within 24 months of approval of the ~~department~~Department. A corrosion control treatment study may be required by the Department to determine the optimum process to be installed. Those systems practicing corrosion control in their treatment process prior to the effective date of these regulations and acceptable to the Department may have the treatment study requirements waived. Systems required to perform a corrosion control treatment study shall complete the study and submit its results along with a proposal for the process to be used to the Department within 12 months of exceeding a compliance limit. This report must include a proposed construction schedule for installation of the equipment. This project must be completed no more than 24 months after the study submittal. All systems installing corrosion control treatment processes shall monitor initial site during the next two consecutive six-month compliance periods.

(b) The water in a water system is considered to meet optimum corrosion control when the distribution system:

1. Water quality parameters reflected on the Baylis Curve indicates no incrusting or corrosion will occur, or

2. The Langelier Index of the water is between -1.0 to +2,

3. The Ryznar Index is between 7 and 11,

4. A phosphate or silicate corrosion inhibitor is continuously applied at the manufacturer/supplier recommended level resulting in minimum complaints, or

5. The Calcium Carbonate Precipitation Potential (CCPP) is maintained between 4-10 mg/l, and

6. The water continuously meets the lead and copper compliance limits.

(c) Any water system may be considered to optimize corrosion control treatment if it demonstrates that it has conducted activities equivalent to the

corrosion control steps outlined in this rule. Water systems deemed to have optimized corrosion control under this subparagraph shall operate in compliance with the State-designated optimal water quality control parameters and continue to conduct lead and copper tap and water quality parameter monitoring as required by these regulations. The system shall provide to the Department:

1. The results of all monitoring for each of the water quality parameters listed in 335-7-11-.13(c);

2. A report explaining the test methods used by the water system to evaluate the corrosion control treatments listed in 335-7-11-13(a), the results of all tests conducted and the basis for the system's selection of optimal corrosion control treatment;

3. A report explaining how corrosion control has been installed and how it is being maintained to ensure minimal lead and copper concentrations at consumer's taps; and

4. The information from tap water monitoring conducted in accordance with 335-7-11-.07 above the compliance limit.

(d) Any water system is deemed to have optimized corrosion control if it submits results of tap water monitoring conducted in accordance with 335-7-11-.08 and source water monitoring in accordance with 335-7-11-.15 that demonstrates for two consecutive six-month monitoring periods that the difference between the 90th percentile tap water level computed under 335-7-11-.03 and the highest source water lead concentration is less than 0.005 mg/l.

1. Those systems whose highest source water lead level is below the Method Detection Limit may also be deemed to have optimized corrosion control under this subparagraph if the 90th percentile tap water lead level is less than or equal to 0.005 mg/l for two consecutive 6-month monitoring periods.

2. Any water system deemed to have optimized corrosion control in accordance with this subparagraph shall continue to monitor for lead and copper at the tap no less frequently than once every three calendar years using the reduced number of monitoring sites and conducting the monitoring at times and locations specified in these regulations.

3. Any water system deemed to have optimized corrosion control shall notify the Department in writing pursuant of any change in treatment or the addition of a new source. Any new source or long-term change in water treatment shall have written approval from the Department before being placed into service or implemented. The system may be required to conduct additional monitoring or to take other action to ensure that the system maintains minimal levels of corrosion in the distribution system.

4. Any system triggered into corrosion control because it is no longer deemed to have optimized corrosion control under this subparagraph shall implement corrosion control treatment in accordance with the deadlines in the regulations. Large systems shall adhere to the schedule specified in the paragraph for medium size systems; with the time periods for completing each step being triggered by the date the system is no longer deemed to have optimized corrosion control under this paragraph.

Author: Joe Alan Power, Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.
History: Adopted: September 23, 1992; Amended: September 19, 1995 (ER); November 28, 1995. Effective: January 2, 1996.
Amended: March 12, 2002; January 22, 2008; May 26, 2009; January 18, 2011; XXXXX, 2012.

335-7-11-.13 Corrosion Control Study. Systems proposing to use a new source or exceeding the lead and copper compliance limit may be required to conduct and submit a corrosion control study to determine the optimum corrosion control process to minimize exposure of lead and copper to the consumers.

(a) Any water system performing a corrosion control study shall evaluate the effectiveness of each of the following treatment processes and if appropriate, any combination of these processes:

1. Alkalinity and pH adjustment,

2. Calcium hardness adjustment, and

3. The addition of a phosphate or silicate based corrosion inhibitor at a concentration to maintain an effective residual in the distribution system.

(b) The study shall use either a pipe-loop test, metal coupon test, partial system test, or analysis based on documented treatment activities from other water systems with similar water chemistry, similar system size, and same distribution system configuration.

(c) The following water quality parameters shall be measured during the test conducted to allow proper evaluation of the processes:

1. Lead

2. Copper

3. pH

4. Total alkalinity

5. Calcium

6. Conductivity

7. Orthophosphate (when a phosphate inhibitor is evaluated)

8. Silicate (when a silicate compound is evaluated)

9. Water temperature

(d) The study shall identify all chemical or physical constraints that may limit or prohibit the use of a particular corrosion treatment method, identify any previously used corrosion control treatment that was found ineffective, or adversely affected any treatment processes, shall evaluate the effect of the proposed chemicals to be used on the water quality treatment

processes demonstrating adequate corrosion control, and shall provide a recommendation of the proposed process to be installed.

(e) Information to be included with the recommended process shall include cost of the proposed installation, equipment to be used including model number and brand, chemical to be added including proposed concentration rate, NSF approval document, and availability information on the chemical and a construction schedule demonstrating the equipment can be operational within 24 months of the study submittal. After review of the recommended process, the ~~department~~Department will determine the optimum corrosion control process and the water quality parameter values. Lead and copper monitoring shall continue each six-month compliance period from the date the parameter values are set.

Author: Joe Alan Power.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.
History: Adopted: September 23, 1992; Amended: September 19, 1995 (ER); November 28, 1995. Effective: January 2, 1996.
Amended: March 12, 2002; XXXXX, 2012.

335-7-11-.17 Public Education Requirement.

(1) Water systems shall provide each customer with the results of any lead and copper monitoring conducted at the customer's tap. These results shall be provided to the customers within 30 days of receipt of the results by the water system.

(a) In addition to the results, the water system shall provide an explanation of the health effects of lead, steps consumers can take to reduce exposure to lead, the water system's contact information, maximum contaminate level goal (MCLG), the action level (AL) for lead and the definition of MCLG and AL.

(b) The notice to the consumer shall be mailed or provided by an alternate method approved by the Department. Non-transient non-community water systems may post the results on a bulletin board in the facility that is readily accessible by all employees.

(c) Notice shall be provided to customers who do not receive a water bill.

(2) Any water system with a lead action level that exceeds the compliance limit shall provide public education materials containing the required language located in paragraph (3) below to the consumers within sixty days of the end of the monitoring period unless the system is being required to meet the repeat public education requirements of this rule. In communities where a significant proportion of the population speaks a language other than English, this material shall be in the appropriate language. This information shall include specific guidance as presented and use the language in subparagraph (c) above. Systems may delete information pertaining to lead service lines, upon approval of the Department, if no lead service lines exist anywhere in the water system service area. Public education language may be modified regarding building permit record availability and consumer access to these records, if approved by the Department. Systems may also continue to utilize pre-printed materials that meet the public education language requirements.

(3) A water system that exceeds the lead action level shall deliver the following public education materials in accordance with paragraph (4) of this rule.

(a) Content of written public education materials.

1. Community and non-transient non-community water systems shall include the following elements in printed materials (brochures and pamphlets) in the same order as listed below. The information in paragraphs (i) and (ii) below shall be included exactly as written except for the text in brackets, where the information shall be water system specific.

(i) IMPORTANT INFORMATION ABOUT LEAD IN YOUR DRINKING WATER. [INSERT NAME OF WATER SYSTEM] found elevated levels of lead in drinking water in some homes/buildings. Lead can cause serious health problems, especially for pregnant women and young children. Please read this information closely to see what you can do to reduce lead in your drinking water.

(ii) Health effects of lead. Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children and pregnant women. Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development.

(iii) Sources of lead.

(I) Explain what lead is.

(II) Explain possible sources of lead in drinking water and how lead enters drinking water. Include information on home/building plumbing materials and service lines that may contain lead.

(III) Discuss other important sources of lead exposure in addition to drinking water (e.g. paints).

(iv) Discuss the steps the consumer can take to reduce their exposure to lead in drinking water.

(I) Encourage running the water to flush out the lead.

(II) Explain concerns with using hot water from the tap and specifically caution against the use of hot water for preparing baby formula.

(III) Explain that boiling water does not reduce lead levels.

(IV) Discuss other options consumers can take to reduce exposure to lead in drinking water, such as alternative sources or treatment of water.

(V) Suggest that parents have their child's blood tested for lead.

(v) Explain why there are elevated levels of lead in the system's drinking water (if known) and what the water system is doing to reduce the lead levels in homes/buildings in this area.

(vi) Include information on where additional assistance may be obtained. The language which follows is suggested: For more information, call

us at [INSERT PHONE NUMBER] or visit our website at [INSERT WEBSITE ADDRESS HERE] if applicable. For more information on reducing lead exposure around your home/building and the health effects of lead, visit EPA's website at http://www.epa.gov/lead or contact your health care provider.

2. Any additional information presented by a water system shall be consistent with the information above and be in plain language that can be understood by the general public.

3. Any information provided to the public under this rule shall have prior written approval by the Department.

(b) Community water systems shall also discuss lead in plumbing components, the difference between low lead and lead free, and how the consumers can get their water tested.

(4) Delivery of public education materials.

(a) Public water systems servicing a large proportion of non-English speaking consumers shall include information in the educational material in the appropriate languages(s) regarding the importance of the notice or contain a telephone number or address where persons served may contact the water system to obtain a translated copy of the public education materials or to request assistance in the appropriate language.

(b) Community water systems that exceed the lead action level that is not already conducting public education shall conduct public education within 60 days of the end of the monitoring period in which the exceedance occurred. The end of the monitoring period for systems that are monitoring no greater than annually shall be September 30 of the year in which the exceedance occurred or another date provided by the Department if the water system is on an alternative monitoring schedule.

1. Printed materials meeting the content requirements of this rule shall be provided to all bill paying customers and all other organizations and entities as required by this rule.

2. The water system shall contact consumers who are most at risk by delivering educational materials that meet the content of this rule to local public health agencies even if they are not located within the water system's service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users.

(i) The water system shall contact the local public health agencies by phone or in person.

(ii) The water system shall provide the required public educational materials to all organizations provided by the local public health agencies that

target the affected populations. This list may include organizations inside or outside of the water system's service area.

(iii) The water system shall request the following list of organizations from public health agencies, including ones not in the water system's service area, and provide these organizations with the educational materials required under this rule along with an informational notice that encourages distribution to all potentially affected customers or users.

(I) Licensed childcare centers.

(II) Public and private preschools.

(III) Obstetricians-Gynecologists and Midwives.

3. The water system shall contact customers who are most at risk by delivering materials to the following organizations that are located in the water system's service area along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users:

(i) Public and private schools or school boards;

(ii) Women, Infants and Children (WIC) and Head Start Programs;

(iii) Public and private hospitals and medical clinics;

(iv) Pediatricians;

(v) Family planning clinics; and,

(vi) Local welfare agencies.

(c) Each quarter that the water system has exceeded the lead action level, the water system shall prove public notice to each customer. The water system shall include the following information in subparagraph (c)1. below (exactly as written] on at least one water bill each quarter.

1. [INSERT NAME OF WATER SYSTEM HERE] found high levels of lead in drinking water in some homes. Lead can cause serious health problems. For more information please call [INSERT NAME OF WATER SYSTEM HERE] [or visit (INSERT NAME OF WEBSITE HERE)].

2. Systems unable to include the statement in paragraph (i) above on its water bill shall consult with the Department for other approved methods of delivery.

(d) Systems with a population greater than 100,000 shall post all required on the water system’s website and provide the address to the Department.

(e) Water systems shall submit a press release to all newspapers, television and radio stations that service the water system's service area.

(f) In addition to the public notification and educational materials required above, the water system shall select and implement three activities from the categories below. The selection of activities and educational content shall be approved by the Department prior to implementation.

1. Public Service Announcements.

2. Paid advertisements.

3. Public Area Information Displays.

4. E-mails to customers.

5. Public Meetings.

6. Household Deliveries.

7. Targeted Individual Customer Contact.

8. Direct material distribution to all multi-family homes and institutions.

9. Other methods as approved by the Department.

(5) A community water system that continues to exceed the action level shall repeat the activities in paragraph (4) above as follows:

(a) A community water system shall repeat the tasks contained in subparagraphs (4)(b) and (4)(f) every 12 months.

(b) A community water system shall repeat the tasks contained in subparagraph (4)(c) with each billing cycle.

(c) A community water system serving a population greater than 100,000 shall maintain on its website a copy of all public educational material required under paragraph (3) until the water system no longer exceeds the action level.

(d) A community water system shall repeat the tasks contained in subparagraph (4)(e) twice every 12 months on a schedule approved by the Department.

(6) A non-transient non-community water system shall deliver the public education materials specified in paragraph (3) of this rule within 60 days after the end of the monitoring period unless it is already providing public education as required under this rule. The end of the monitoring period for a system that is monitoring no greater than annually shall be September 30 of

the year in which the exceedance occurred or the last day of an alternative monitoring schedule. The distribution of public educational materials shall be as follows:

(a) Post informational posters on lead in drinking water in a public place or common area in of the buildings served by the system.

(b) Informational pamphlets and/or brochures on lead in drinking water shall be distributed to each person served by the water system.

(c) The public educational materials shall be distributed as required in this rule at least once each year in which the system exceeds the lead action level.

(7) A community water system serving a population less than 3,301 people may limit certain aspects of its public education program as follows:

(a) One activity under subparagraph (4)(f) shall be implemented instead of the three required in subparagraph (4)(f).

(b) The water system may limit the distribution of public education materials required under subparagraph (4)(b)2. to facilities and organizations served by the system that are most likely to be visited regularly by pregnant women and children.

(c) The water system may request to have the requirements of subparagraph (4)(e) waived provided the system distributes notices to every household served by the system.

(8) A community water system which is a facility such as a prison or hospital where the population is not capable of or is prevented from making improvements to plumbing or installing point of use treatment devices or is a system that proves water as part of the cost of services and does not charge separately for water consumption may request in writing to only use the text specified in paragraph (3) of this rule and provide notification according to paragraph (6) of this rule.

(9) A water system may discontinue delivery of public educational materials if the system has met the lead action level during the most recent six-month monitoring period. Public education shall resume if the water system exceeds the lead action level during any monitoring period.

(10) A water system that fails to meet the lead action level on the basis of tap samples collected under this rule shall offer to sample the tap water of any customer who requests it. The water system is not required to pay for collecting or analyzing the sample, nor is the system required to collect and analyze the sample itself.

Author: Joe Alan Power, Dennis D. Harrison.
Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; Amended: September 19, 1995 (ER); November 28, 1995. Effective: January 2, 1996.
Amended: March 12, 2002; January 22, 2008; May 26, 2009; XXXXX, 2012.

Appendix A

Standard List Of Primary Drinking Water Contaminants For CCR

Contaminant	MCL	Amount Detected
Bacteriological		
Total Coliform Bacteria	< 5%	
Turbidity	TT	
Fecal coliform and *E. coli*	0	
Fecal Indicators (enterococci or coliphage)	TT	
Radiological		
Beta/photon emitters (mrem/yr)	4	
Alpha emitters (pCi/l)	15	
Combined radium (pCi/l)	5	
Uranium	~~30 pCi/L~~30 ppb	
Inorganic Chemicals		
Antimony	6 ppb	
Arsenic	10 ppb	
Asbestos (MFL)	7	
Barium	2 ppm	
Beryllium	4 ppb	
Bromate	10 ppb	
Cadmium	5 ppb	
Chloramines	4 ppm	
Chlorine	4 ppm	
Chlorine dioxide	800 ppb	
Chlorite	1 ppm	
Chromium	100 ppb	

Appendix A

Standard List Of Primary Drinking Water Contaminants For CCR

Contaminant	MCL	Amount Detected
Copper	AL=1.3 ppm	
Cyanide	200 ppb	
Fluoride	4 ppm	
Lead	AL=15 ppb	
Mercury	2 ppb	
Nitrate	10 ppm	
Nitrite	1 ppm	
Total Nitrate and Nitrite	10 ppm	
Selenium	50 ppb	
Thallium	2 ppb	
Organic Chemicals		
Acrylamide	TT	
Alachlor	2 ppb	
Atrazine	3 ppb	
Benzene	5 ppb	
Benzo(a)pyrene [PAHs]	200 ppt	
Carbofuran	40 ppb	
Carbon tetrachloride	5 ppb	
Chlordane	2 ppb	
Chlorobenzene	100 ppb	
2,4-D	70 ppb	
Dalapon	200 ppb	
Dibromochloropropane	200 ppt	

Appendix A

Standard List Of Primary Drinking Water Contaminants For CCR

Contaminant	MCL	Amount Detected
o-Dichlorobenzene	600 ppb	
p-Dichlorobenzene	75 ppb	
1,2-Dichloroethane	5 ppb	
1,1-Dichloroethylene	7 ppb	
cis-1,2-Dichloroethylene	70 ppb	
trans-1,2-Dichloroethylene	100 ppb	
Dichloromethane	5 ppb	
1,2-Dichloropropane	5 ppb	
Di (2-ethylhexyl) adipate	400 ppb	
Di (2-ethylhexyl) phthalates	6 ppb	
Dinoseb	7 ppb	
Dioxin [2,3,7,8-TCDD]	30 ppq	
Diquat	20 ppb	
Endothall	100 ppb	
Endrin	2 ppb	
Epichlorohydrin	TT	
Ethylbenzene	700 ppb	
Ethylene dibromide	50 ppt	
Glyphosate	700 ppb	
HAA5 (haloacetic acids 5)	60 ppb	
Heptachlor	400 ppt	
Heptachlor epoxide	200 ppt	
Hexachlorobenzene	1 ppb	

Appendix A

Standard List Of Primary Drinking Water Contaminants For CCR

Contaminant	MCL	Amount Detected
Hexachlorocyclopentadiene	50 ppb	
Lindane	200 ppt	
Methoxychlor	40 ppb	
Oxamyl [Vydate]	200 ppb	
Pentachlorophenol	1 ppb	
Picloram	500 ppb	
Polychlorinated biphenyls (PCBs)	500 ppt	
Simazine	4 ppb	
Styrene	100 ppb	
Tetrachloroethylene	5 ppb	
Toluene	1 ppm	
TOC (Total Organic Carbon)	TT	
TTHMs [Total trihalomethanes]	80 ppb	
Toxaphene	3 ppb	
2,4,5-TP (Silvex)	50 ppb	
1,2,4-Trichlorobenzene	70 ppb	
1,1,1-Trichloroethane	200 ppb	
1,1,2-Trichloroethane	5 ppb	
Trichloroethylene	5 ppb	
Vinyl Chloride	2 ppb	
Xylenes	10 ppm	

Appendix B

Regulated Contaminants For CCR

Contaminant (units)	MCLG	MCL	Major Sources
Total Coliform Bacteria (including fecal coliform and *E. coli*)	MCLG = 0 MCL - presence of coliform bacteria in ≤5% of monthly samples, or if a routine sample and a follow up repeat sample are total coliform positive and one is also fecal coliform or *E. coli* positive		Human and animal fecal waste
Fecal Indicators (GWR)			Human and animal fecal waste
i. *E. coli*	0	TT	
ii. Enterococci	None	TT	
iii. coliphage	None	TT	
GWR TT Violations	None	TT	Human and animal fecal waste
Viruses, *Giardia*	0	TT	Human and animal fecal waste
Legionella	0	TT	Found naturally in water, multiplies in heating systems
Beta/photon emitters (mrem/yr)	0	4	Decay of natural and man-made deposits
Alpha emitters (pCi/l)	0	15	Erosion of natural deposits
Combined radium (pCi/l)	0	5	Erosion of natural deposits
Uranium	0	30 ppb	Erosion of natural deposits
Antimony	6 ppb	6 ppb	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic	0	10 ppb	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Asbestos (MFL)	7	7	Decay of asbestos cement water mains; Erosion of natural deposits
Barium	2	2 ppm	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Beryllium	4 ppb	4 ppb	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries

Appendix B

Contaminant (units)	MCLG	MCL	Major Sources
Cadmium	5 ppb	5 ppb	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; runoff from waste batteries and paints
Chromium	100 ppb	100 ppb	Discharge from steel and pulp mills; Erosion of natural deposits
Copper	1.3	AL = 1.3 ppm	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Cyanide	200 ppb	200 ppb	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories
Fluoride	4	4 ppm	Water additive which promotes strong teeth; Erosion of natural deposits; Discharge from fertilizer and aluminum factories
Lead	0	AL = 15 ppb	Corrosion of household plumbing systems; Erosion of natural deposits
Mercury	2 ppb	2 ppb	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland
Nitrate	10	10 ppm	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite	1	1 ppm	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Selenium	50 ppb	50 ppb	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
Thallium	0.5 ppb	2 ppb	Leaching from ore-processing sites; Discharge from electronics, glass, and drug factories
Turbidity	n/a	TT	Soil runoff
2,4-D	70 ppb	70 ppb	Runoff from herbicide used on row crops
2,4,5-TP(Silvex)	50 ppb	50 ppb	Residue of banned herbicide

Contaminant (units)	MCLG	MCL	Major Sources
Acrylamide	0	TT	Added to water during sewage/wastewater treatment
Alachlor	0	2 ppb	Runoff from herbicide used on row crops
Atrazine	3 ppb	3 ppb	Runoff from herbicide used on row crops
Benzo(a)pyrene [PAHs]	0	200 ppt	Leaching from linings of water storage tanks and distribution lines
Carbofuran	40 ppb	40 ppb	Leaching of soil fumigant used on rice and alfalfa
Chlordane	0	2 ppb	Residue of banned termiticide
Dalapon	200 ppb	200 ppb	Runoff from herbicide used on rights of way
Di (2-ethylhexyl)adipate	400 ppb	400 ppb	Discharge from chemical factories
Di (2-ethylhexyl) phthalate	0	6 ppb	Discharge from rubber and chemical factories
Dinoseb	7 ppb	7 ppb	Runoff from herbicide used on soybeans and vegetables
Diquat	20 ppb	20 ppb	Runoff from herbicide use
Dioxin [2,3,7,8-TCDD]	0	30 ppq	Emissions from waste incineration and other combustion; Discharge from chemical factories
Endothall	100 ppb	100 ppb	Runoff from herbicide use
Endrin	2 ppb	2 ppb	Residue of banned insecticide
Epichlorohydrin	0	TT	Discharge from industrial chemical factories; Added to water during treatment process; An impurity of some water treatment chemicals
Glyphosate	700 ppb	700 ppb	Runoff from herbicide use
Heptachlor	0	400 ppt	Residue of banned pesticide
Heptachlor epoxide	0	200 ppt	Breakdown of heptachlor
Hexachlorobenzene	0	1 ppb	Discharge from metal refineries and agricultural chemical factories
Hexachlorocyclopentadiene	50 ppb	50 ppb	Discharge from chemical factories
Lindane	200 ppt	200 ppt	Runoff/leaching from insecticide used on cattle, lumber, gardens

Appendix B

Contaminant (units)	MCLG	MCL	Major Sources
Methoxychlor	40 ppb	40 ppb	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Oxamyl [Vydate]	200 ppb	200 ppb	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
PCBs [Polychlorinated biphenyls]	0	500 ppt	Runoff from landfills; Discharge of waste chemicals
Pentachlorophenol	0	1 ppb	Discharge from wood preserving factories
Picloram	500 ppb	500 ppb	Herbicide runoff
Simazine	4 ppb	4 ppb	Herbicide runoff
Toxaphene	0	3 ppb	Runoff/leaching from insecticide used on cotton and cattle
Benzene	0	5 ppb	Discharge from factories; Leaching from gas storage tanks and landfills
Carbon tetrachloride	0	5 ppb	Discharge from chemical plants and other industrial activities
Chlorobenzene	100 ppb	100 ppb	Discharge from chemical and agricultural chemical factories
Dibromochloropropane	0	200 ppt	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
o-Dichlorobenzene	600 ppb	600 ppb	Discharge from industrial chemical factories
p-Dichlorobenzene	75 ppb	75 ppb	Discharge from industrial chemical factories
1,2-Dichloroethane	0	5 ppb	Discharge from industrial chemical factories
1,1-Dichloroethylene	7 ppb	7 ppb	Discharge from industrial chemical factories
cis-1,2-Dichloroethylene	70 ppb	70 ppb	Discharge from industrial chemical factories
trans-1,2-Dichloroethylene	100 ppb	100 ppb	Discharge from industrial chemical factories
Dichloromethane	0	5 ppb	Discharge from pharmaceutical and chemical factories
1,2-Dichloropropane	0	5 ppb	Discharge from industrial chemical factories
Ethylbenzene	700 ppb	700 ppb	Discharge from petroleum refineries

Contaminant (units)	MCLG	MCL	Major Sources
Ethylene dibromide	0	50 ppt	Discharge from petroleum refineries
Styrene	100 ppb	100 ppb	Discharge from rubber and plastic factories; Leaching from landfills
Tetrachloroethylene	0	5 ppb	Leaching from PVC pipes; Discharge from factories and dry cleaners
1,2,4-Trichlorobenzene	70 ppb	70 ppb	Discharge from textile-finishing factories
1,1,1-Trichloroethane	200 ppb	200 ppb	Discharge from metal degreasing sites and other factories
1,1,2-Trichloroethane	3 ppb	5 ppb	Discharge from industrial chemical factories
Trichloroethylene	0	5 ppb	Discharge from metal degreasing sites and other factories
TTHM [Total trihalomethanes]	N/A	80 ppb	By-product of drinking water chlorination
Toluene	1	1 ppm	Discharge from petroleum factories
Vinyl Chloride	0	2 ppb	Leaching from PVC piping; Discharge from plastics factories
Xylenes	10	10 ppm	Discharge from petroleum factories; Discharge from chemical factories
Total organic carbon	N/A	TT	Naturally present in the environment
Bromate	0	10 ppb	By-product of drinking water chlorination
Chloramines	MRDLG = 4	MRDL = 4 ppm	Water additive used to control microbes
Chlorine	MRDLG = 4	MRDL = 4 ppm	Water additive used to control microbes
Chlorite	800 ppb	1 ppm	By-product of drinking water chlorination
Chlorine Dioxide	MRDLG = 800	MRDL = 800 ppb	Water additive used to control microbes
Haloacetic Acids (HAA5)	N/A	60 ppb	By-product of drinking water disinfection

Key
AL =Action Level
GWR = Ground Water Rule
MCL = Maximum Contaminant Level

MCLG = Maximum Contaminant Level Goal
MFL = million fibers per liter
mg/l = milligrams per liter, or parts per million
mrem/year = millirems per year (a measure of radiation absorbed by the body)
pCi/l = picocuries per liter (a measure of radioactivity)
ppb = parts per billion or micrograms per liter
ppm = parts per million or milligrams per liter
ppq = parts per quadrillion or picograms per liter
ppt = parts per trillion or nanograms per liter
TT = Treatment Technique